US009415962B2

(12) **United States Patent**
Yamada

(10) **Patent No.: US 9,415,962 B2**
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(54) **PRINTING APPARATUS, CONTROL METHOD THEREFOR, AND STORAGE MEDIUM**

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(73) Assignee: **CANON KABUSHIKI KAISHA**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/480,619**

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(65) **Prior Publication Data**

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Related U.S. Application Data

(63) Continuation of application No. 13/755,960, filed on Jan. 31, 2013, now Pat. No. 8,840,101.

(30) **Foreign Application Priority Data**

Feb. 22, 2012 (JP) 2012-036762

(51) **Int. Cl.**
B65H 7/20 (2006.01)
B65H 9/00 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC .. ***B65H 7/20*** (2013.01); ***B65H 1/04*** (2013.01); ***B65H 3/44*** (2013.01); ***B65H 7/02*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC B65H 1/04; B65H 3/66; B65H 5/36; B65H 43/00; B65H 2301/13; B65H 2404/741; B65H 2511/10; B65H 2701/113; B65H 2701/1131; B65H 2701/1916; B65H 7/20; B65H 7/02; B65H 3/44; B65H 9/00; B65H 2553/61; B65H 2403/411; B65H 2551/18; B65H 2511/22; B65H 2557/23; B65H 2511/414; B65H 2553/21; G03G 15/6594; G03G 2215/00514
USPC 271/2, 171
See application file for complete search history.

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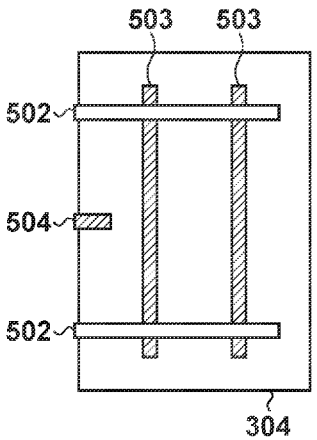
Primary Examiner — David H Bollinger
(74) *Attorney, Agent, or Firm* — Fitzpatrick, Cella, Harper & Scinto

(57) **ABSTRACT**

A printing apparatus according to one aspect of this invention includes a sheet holding unit configured to hold an envelope, and a detection unit configured to detect an opening width between guides for guiding an envelope held by the sheet holding unit. The printing apparatus further includes an identifying unit configured to identify a flap size of the envelope based on the opening width detected by the detection unit and a size set for the envelope held by the sheet holding unit, and a printing unit configured to print an image on the envelope by shifting image data based on the flap size identified by the identifying unit.

10 Claims, 23 Drawing Sheets



(51) **Int. Cl.**

B65H 1/04	(2006.01)
B65H 3/44	(2006.01)
B65H 7/02	(2006.01)
G03G 15/00	(2006.01)

(52) **U.S. Cl.**

CPC ***B65H 9/00*** (2013.01); ***G03G 15/6594*** (2013.01); *B65H 2403/411* (2013.01); *B65H 2407/21* (2013.01); *B65H 2511/10* (2013.01); *B65H 2511/22* (2013.01); *B65H 2511/414* (2013.01); *B65H 2511/416* (2013.01); *B65H 2551/18* (2013.01); *B65H 2553/21* (2013.01); *B65H 2553/61* (2013.01); *B65H 2557/23* (2013.01); *B65H 2701/1916* (2013.01); *B65H 2801/06* (2013.01); *G03G 2215/00514* (2013.01)

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2004/0131405	A1	7/2004	Mizusawa
2005/0189694	A1	9/2005	Kotani
2006/0151938	A1	7/2006	Bauvin et al.
2009/0002752	A1	1/2009	Sugiyama
2010/0067050	A1	3/2010	Matsuura
2010/0165407	A1	7/2010	Witkowski et al.
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2010/0309273	A1	12/2010	Salvestro
2010/0314276	A1	12/2010	Wilen
2011/0025037	A1	2/2011	Wilen
2011/0135325	A1	6/2011	Hitaka
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2015/0036172	A1	2/2015	Tachibana

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JP	6-337560	A	12/1994
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JP	2004-138816	A	5/2004
JP	2006-91291	A	4/2006
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JP	2011-101973	A	5/2011

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FIG. 1

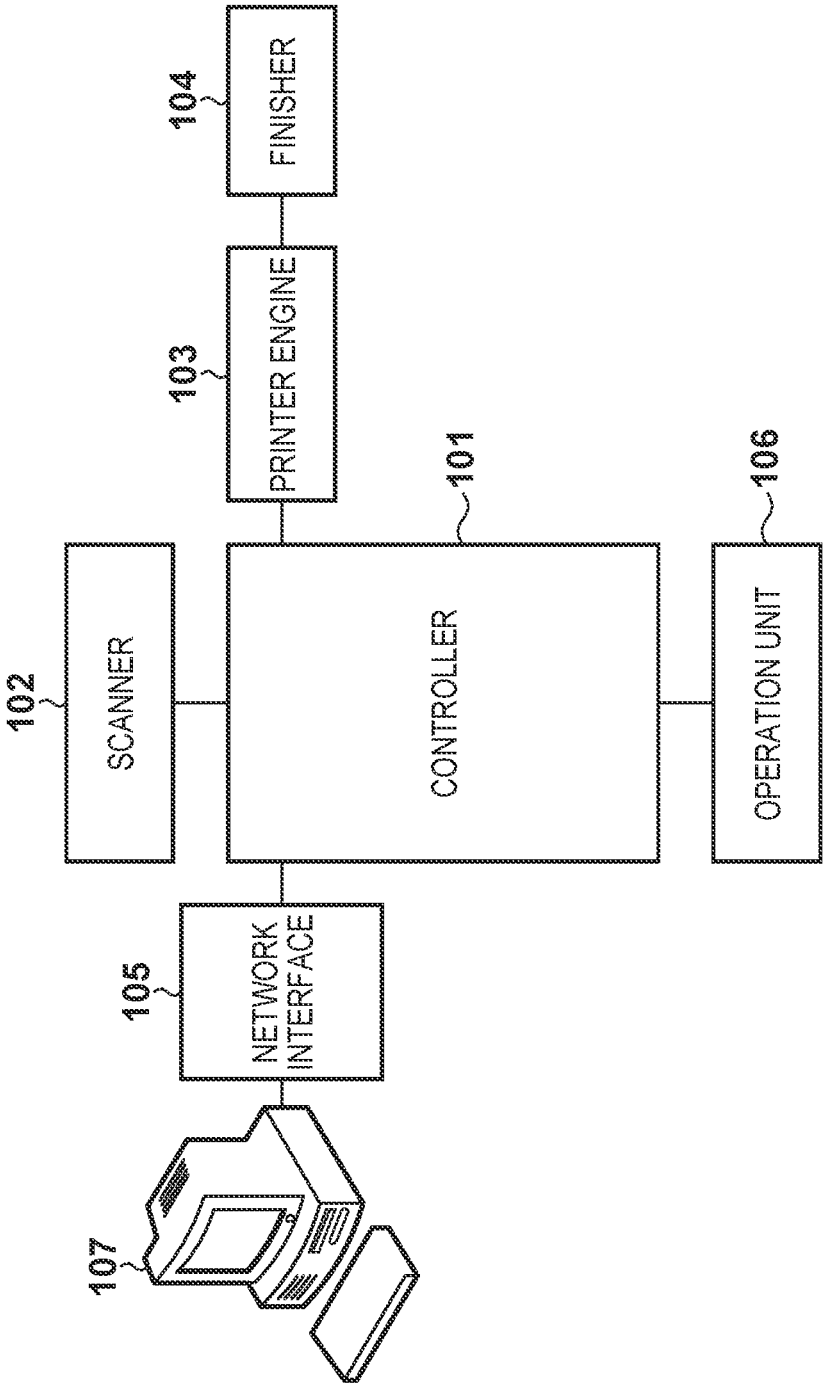

104
FINISHER
103
PRINTER ENGINE
101
106
102
SCANNER
CONTROLLER
OPERATION UNIT
105
NETWORK INTERFACE
107

FIG. 2

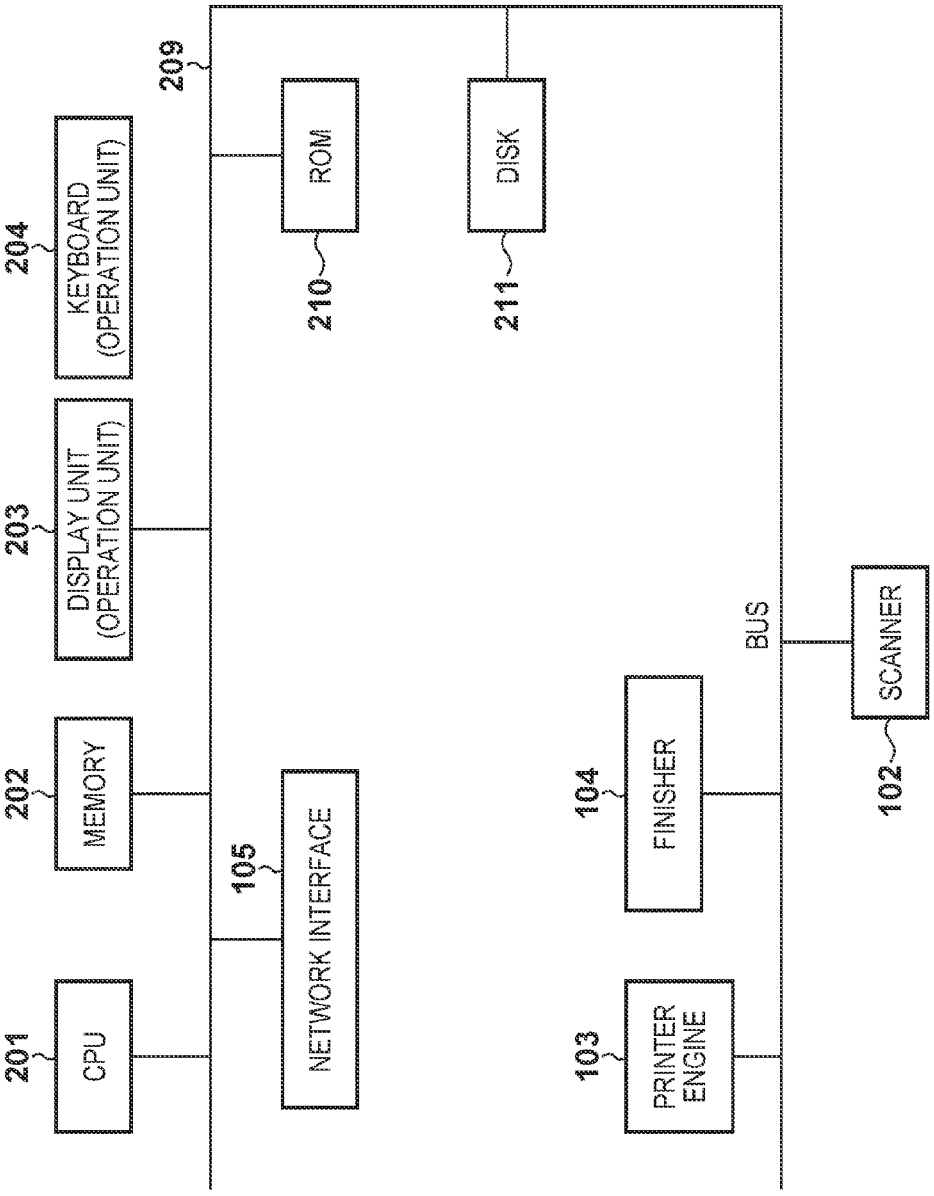

201
CPU
202
MEMORY
203
DISPLAY UNIT (OPERATION UNIT)
204
KEYBOARD (OPERATION UNIT)
105
NETWORK INTERFACE
209
ROM
210
DISK
211
103
PRINTER ENGINE
104
FINISHER
BUS
SCANNER
102

FIG. 3

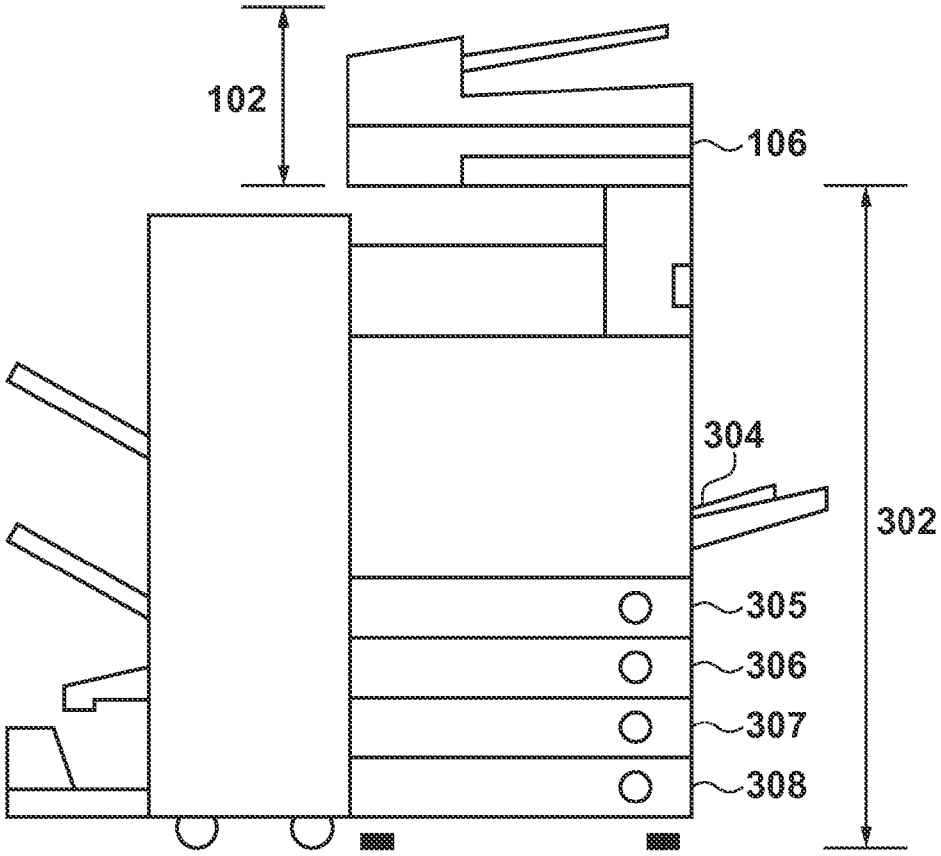


FIG. 4

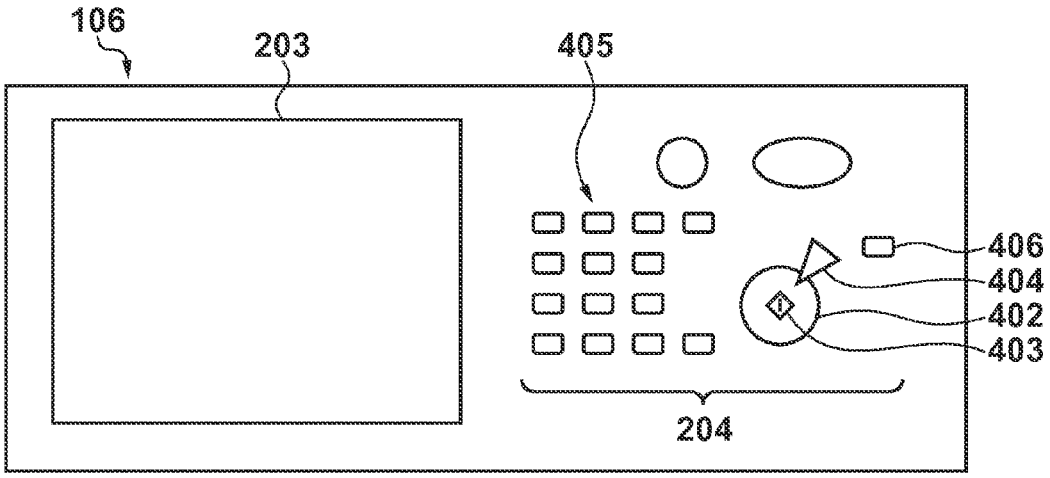


FIG. 5D

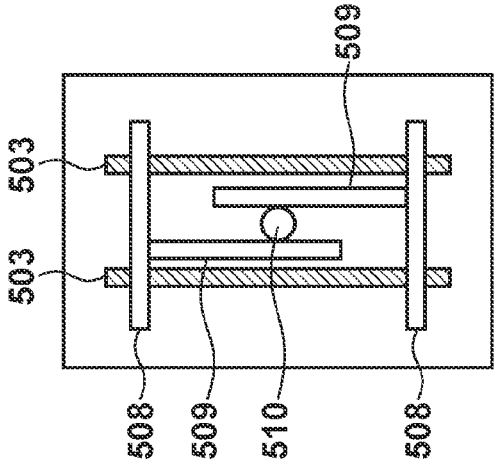


FIG. 5C

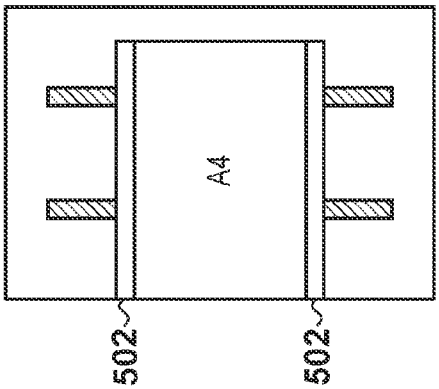


FIG. 5B

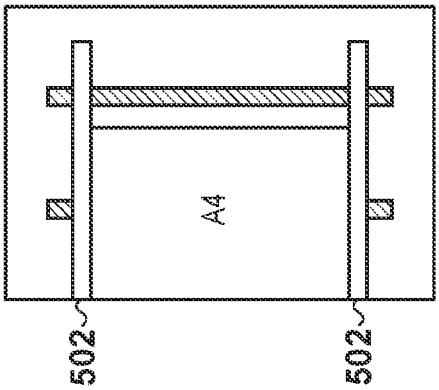


FIG. 5A

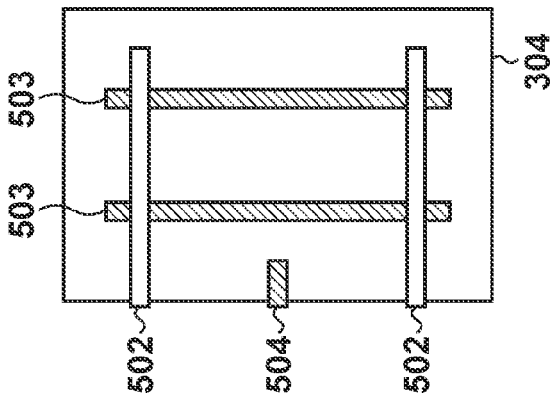


FIG. 6A

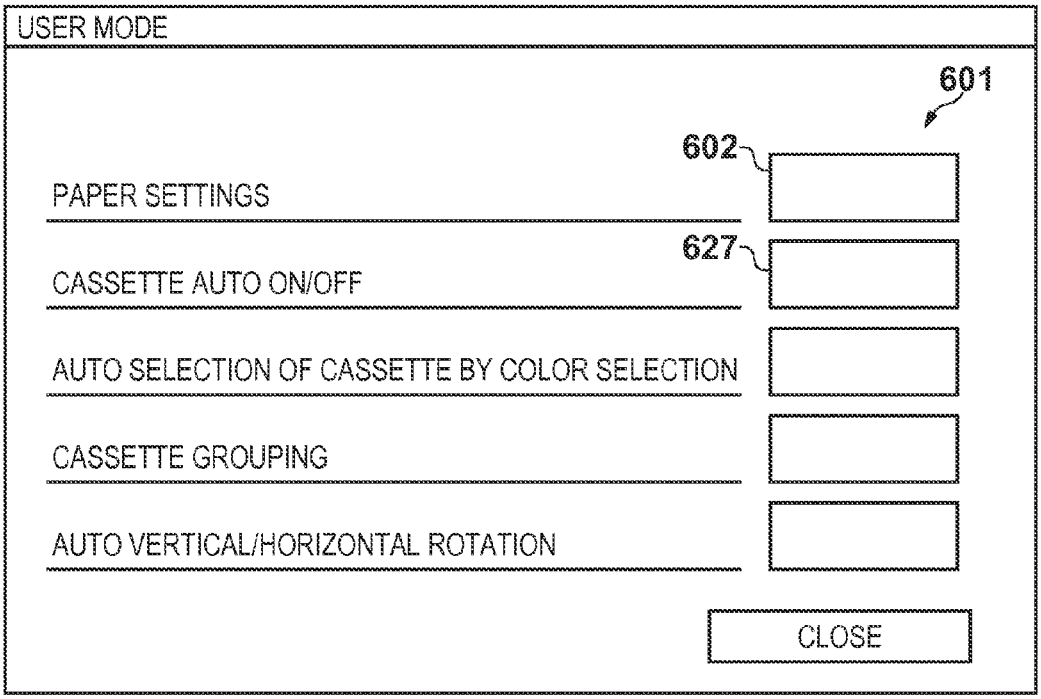

USER MODE
601
602
PAPER SETTINGS
627
CASSETTE AUTO ON/OFF
AUTO SELECTION OF CASSETTE BY COLOR SELECTION
CASSETTE GROUPING
AUTO VERTICAL/HORIZONTAL ROTATION
CLOSE

FIG. 6B

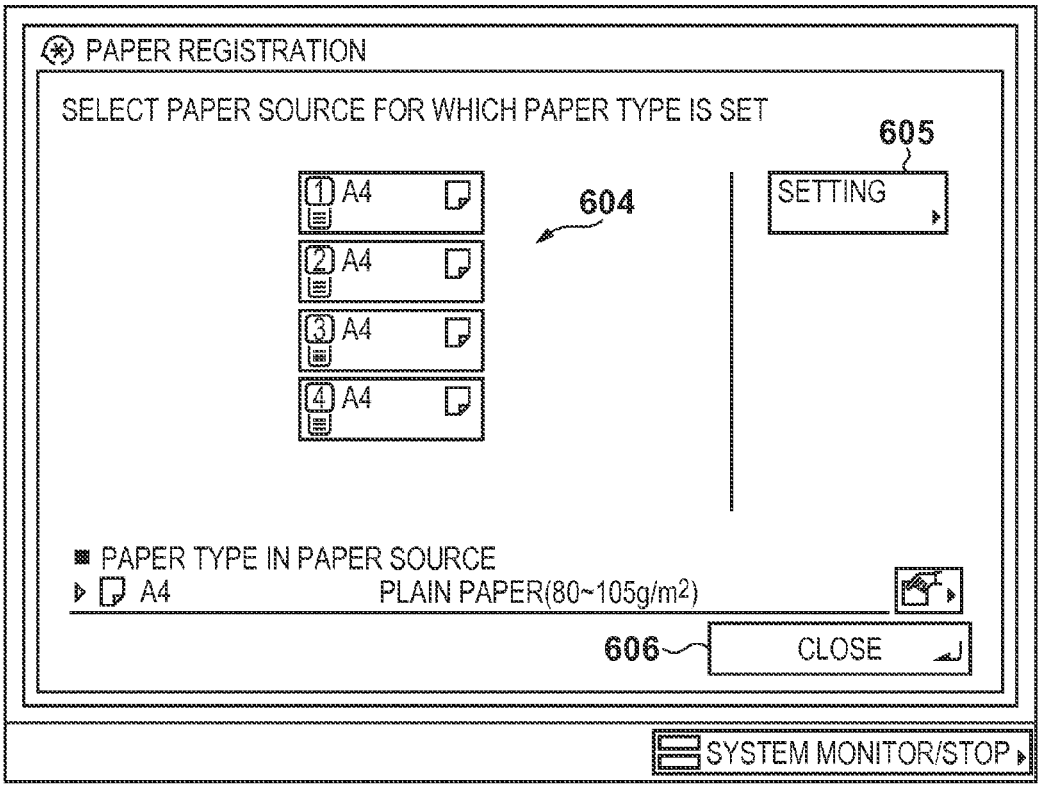

PAPER REGISTRATION
SELECT PAPER SOURCE FOR WHICH PAPER TYPE IS SET
605
1 A4
2 A4
3 A4
4 A4
604
SETTING
PAPER TYPE IN PAPER SOURCE
A4
PLAIN PAPER(80~105g/m2)
606
CLOSE
SYSTEM MONITOR/STOP

FIG. 7A

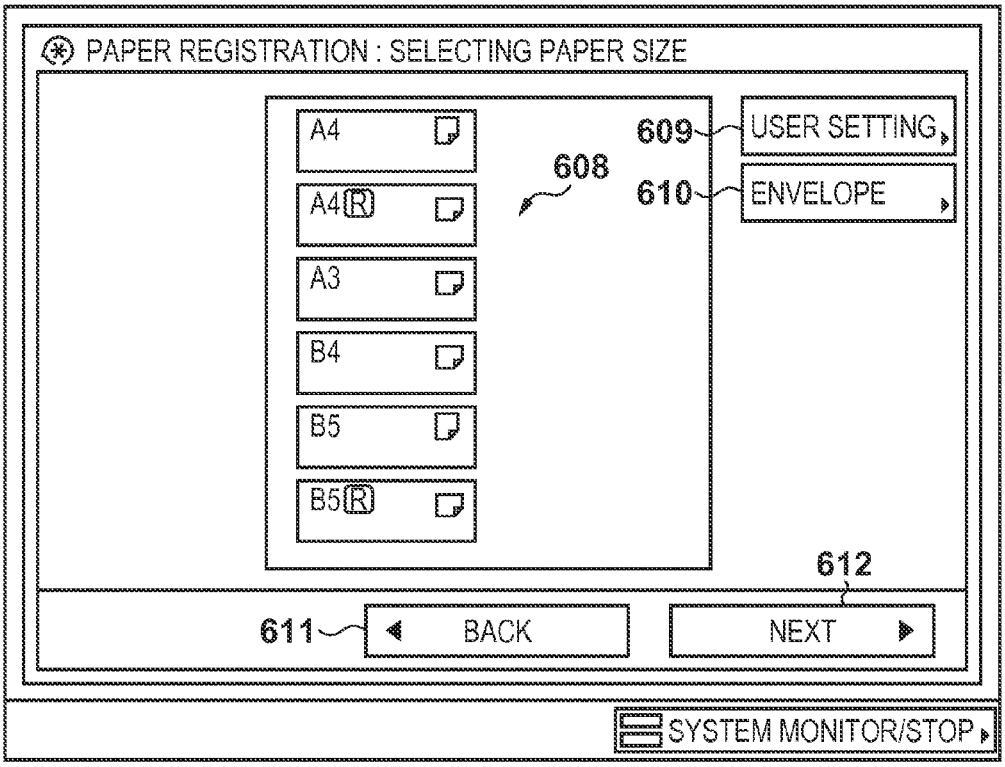

PAPER REGISTRATION : SELECTING PAPER SIZE
A4
A4R
A3
B4
B5
B5R
608
609
USER SETTING
610
ENVELOPE
612
611
BACK
NEXT
SYSTEM MONITOR/STOP

FIG. 7B

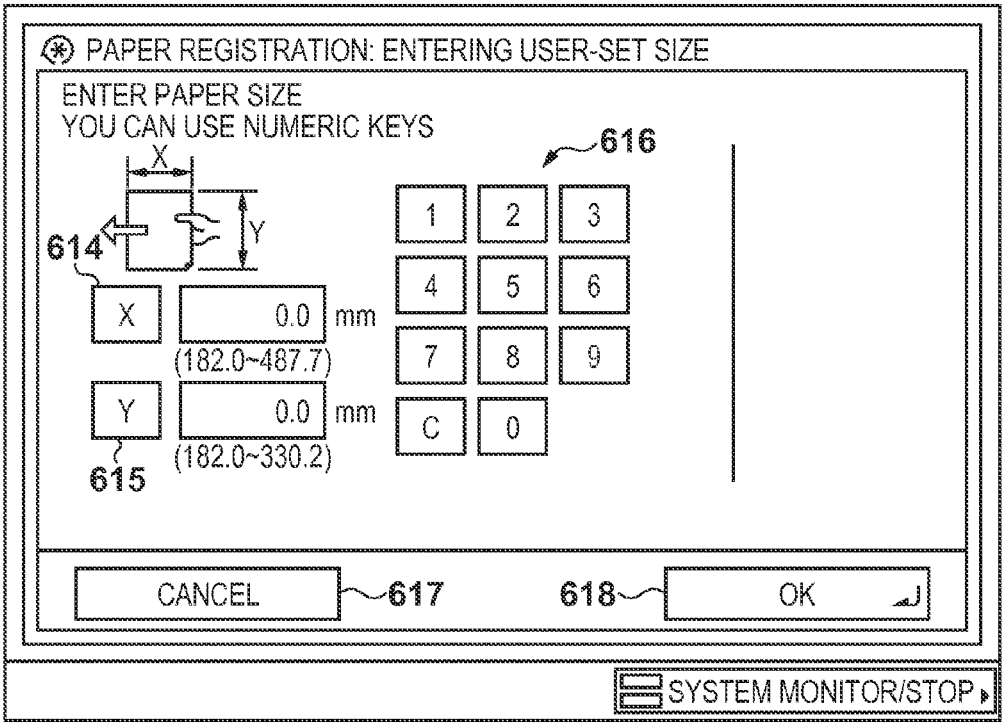

PAPER REGISTRATION: ENTERING USER-SET SIZE
ENTER PAPER SIZE
YOU CAN USE NUMERIC KEYS
X
Y
614
616
1
2
3
4
5
6
7
8
9
C
0
X
0.0
mm
(182.0~487.7)
Y
0.0
mm
(182.0~330.2)
615
CANCEL
617
618
OK
SYSTEM MONITOR/STOP

FIG. 8A

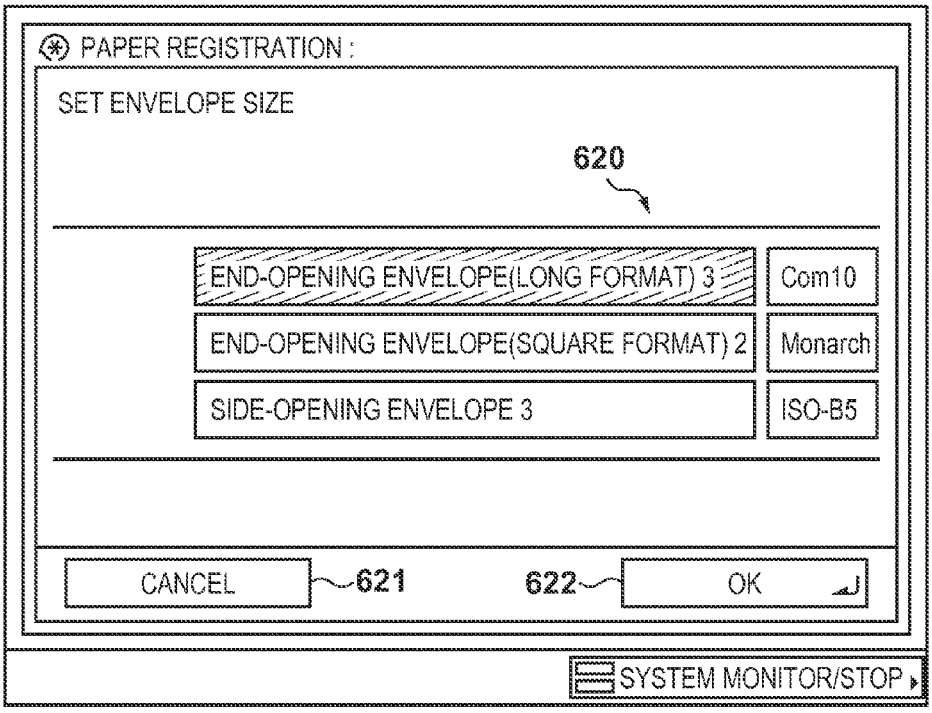

PAPER REGISTRATION :
SET ENVELOPE SIZE
620
END-OPENING ENVELOPE(LONG FORMAT) 3
Com10
END-OPENING ENVELOPE(SQUARE FORMAT) 2
Monarch
SIDE-OPENING ENVELOPE 3
ISO-B5
CANCEL
621
622
OK
SYSTEM MONITOR/STOP

FIG. 8B

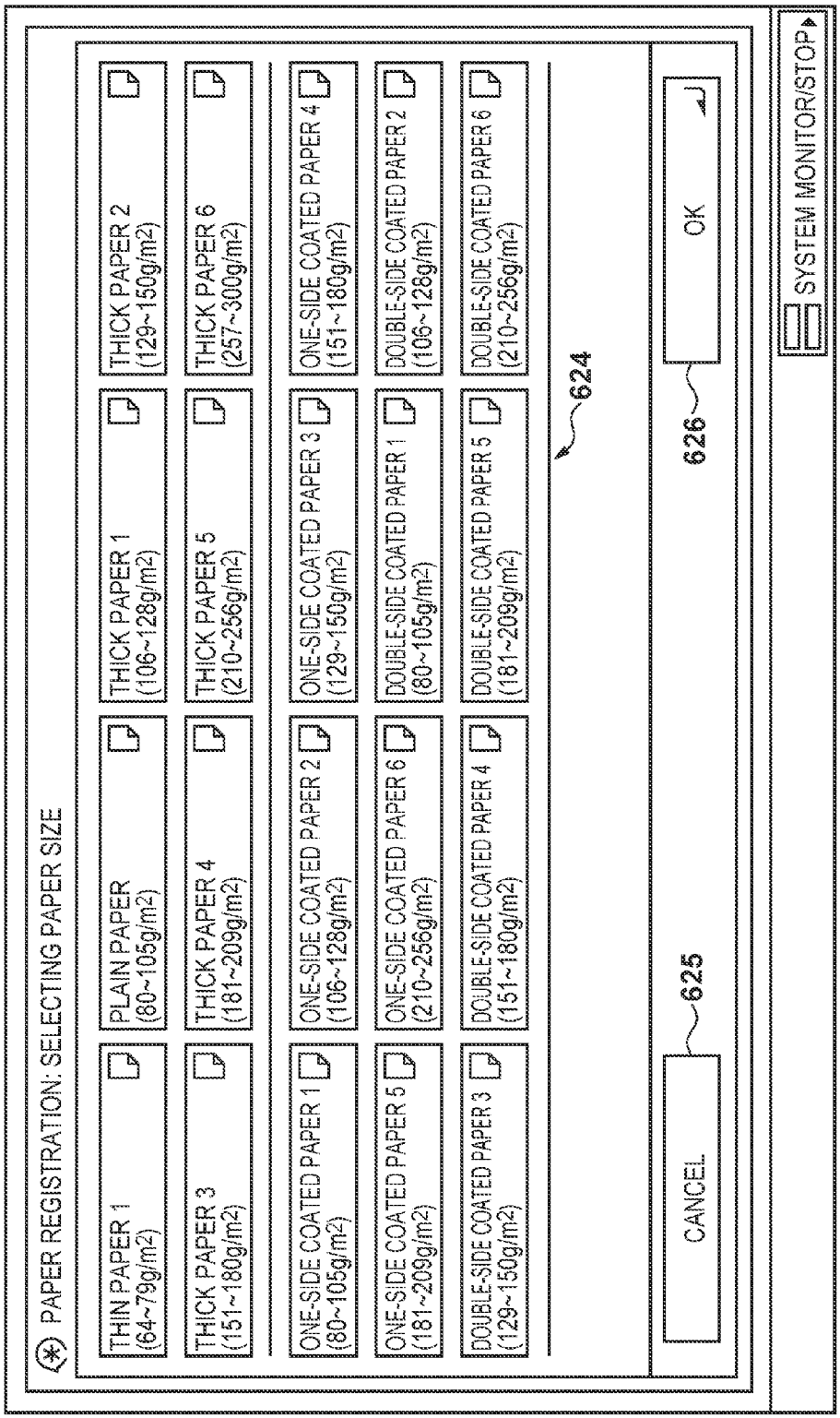

PAPER REGISTRATION: SELECTING PAPER SIZE
THIN PAPER 1 (64~79g/m2)
PLAIN PAPER (80~105g/m2)
THICK PAPER 1 (106~128g/m2)
THICK PAPER 2 (129~150g/m2)
THICK PAPER 3 (151~180g/m2)
THICK PAPER 4 (181~209g/m2)
THICK PAPER 5 (210~256g/m2)
THICK PAPER 6 (257~300g/m2)
ONE-SIDE COATED PAPER 1 (80~105g/m2)
ONE-SIDE COATED PAPER 2 (106~128g/m2)
ONE-SIDE COATED PAPER 3 (129~150g/m2)
ONE-SIDE COATED PAPER 4 (151~180g/m2)
ONE-SIDE COATED PAPER 5 (181~209g/m2)
ONE-SIDE COATED PAPER 6 (210~256g/m2)
DOUBLE-SIDE COATED PAPER 1 (80~105g/m2)
DOUBLE-SIDE COATED PAPER 2 (106~128g/m2)
DOUBLE-SIDE COATED PAPER 3 (129~150g/m2)
DOUBLE-SIDE COATED PAPER 4 (151~180g/m2)
DOUBLE-SIDE COATED PAPER 5 (181~209g/m2)
DOUBLE-SIDE COATED PAPER 6 (210~256g/m2)
624
CANCEL
625
626
OK
SYSTEM MONITOR/STOP

FIG. 9

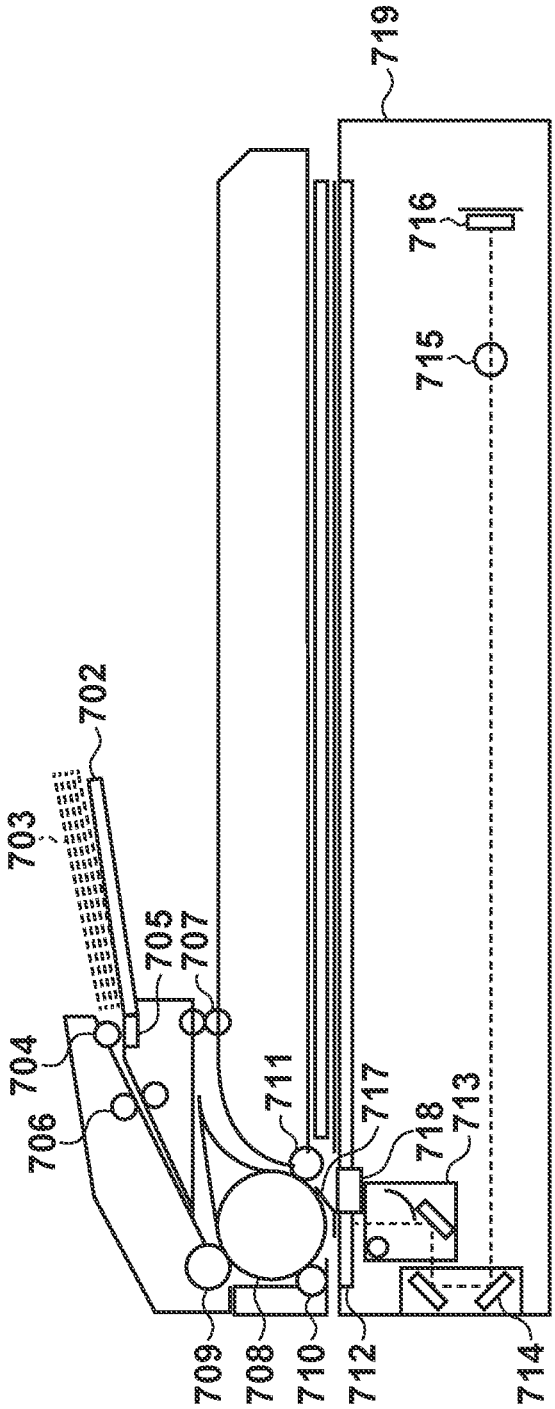

719
716
715
702
703
705
707
704
706
711
717
718
713
709
708
710
712
714

FIG. 10

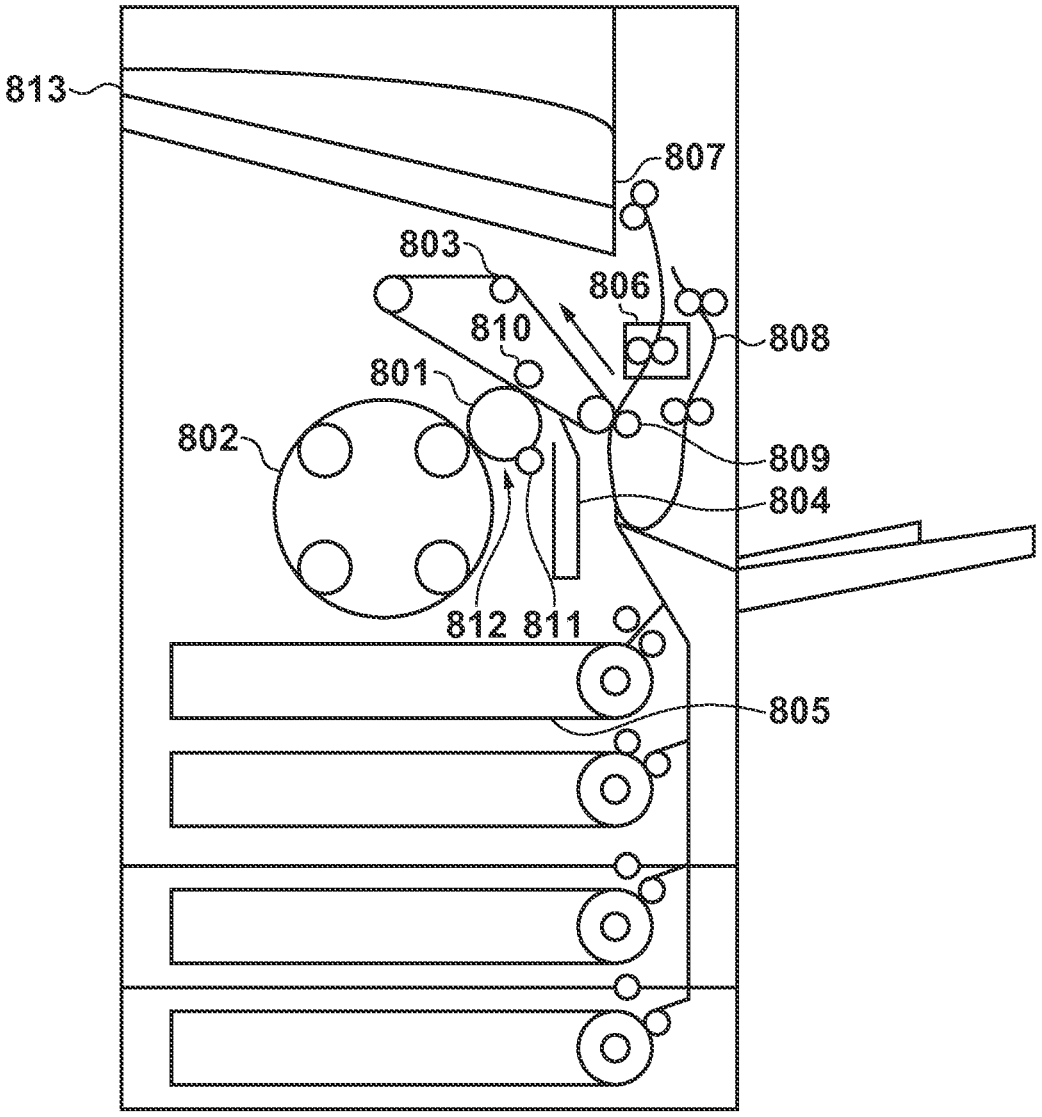


FIG. 11

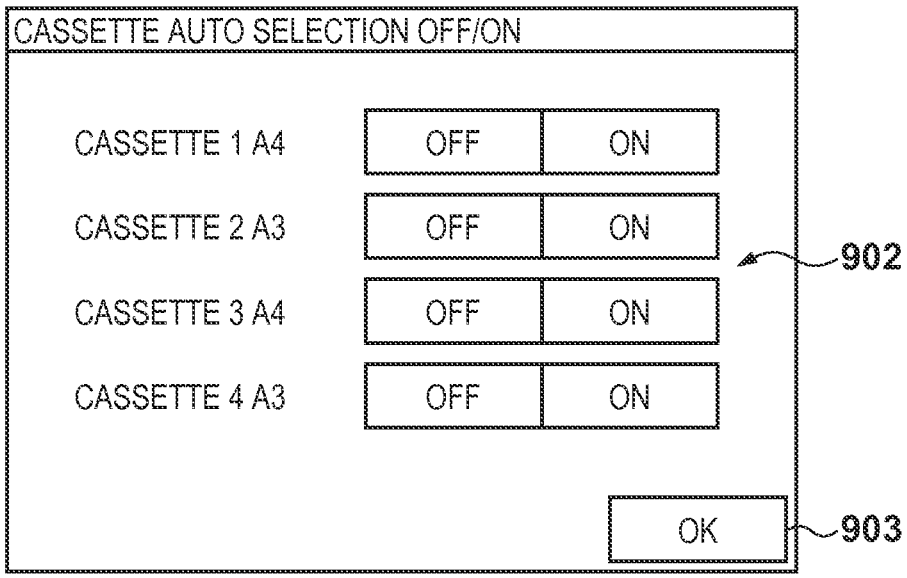

CASSETTE AUTO SELECTION OFF/ON
CASSETTE 1 A4
OFF
ON
CASSETTE 2 A3
OFF
ON
CASSETTE 3 A4
OFF
ON
CASSETTE 4 A3
OFF
ON
902
OK
903

FIG. 12

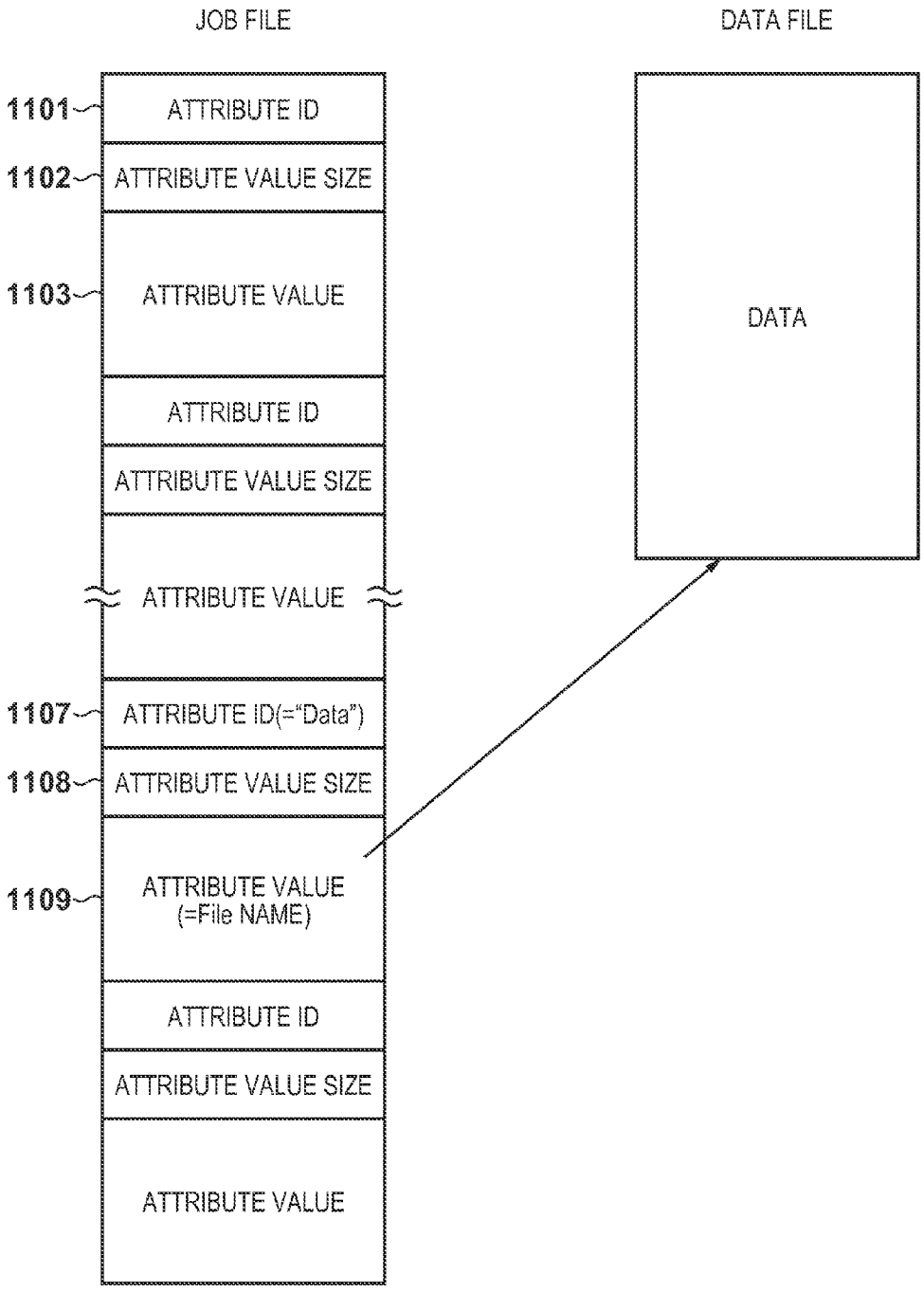

JOB FILE
DATA FILE
1101
ATTRIBUTE ID
1102
ATTRIBUTE VALUE SIZE
1103
ATTRIBUTE VALUE
ATTRIBUTE ID
ATTRIBUTE VALUE SIZE
ATTRIBUTE VALUE
1107
ATTRIBUTE ID(="Data")
1108
ATTRIBUTE VALUE SIZE
1109
ATTRIBUTE VALUE
(=File NAME)
ATTRIBUTE ID
ATTRIBUTE VALUE SIZE
ATTRIBUTE VALUE
DATA

FIG. 13

1301 ATTRIBUTE ID	1302 TYPE ID	1303 VALUE	1304 MEANING
10	1	ARBITRARY CHARACTER STRING	JOB NAME
11	1	ARBITRARY CHARACTER STRING	APPLICATION NAME
100	2	1, 2, 3, 4, 5 or AUTO	PAPER FEED TRAY
101	2	1, 2, 3, 4	DISCHARGE TRAY
104	2	3	COPY COUNT
⋮	⋮	⋮	⋮
401	11	0~7015, 0~9920	IMAGE SIZE
402	11	0~7015, 0~9920	MOVING AMOUNT
403	2	A4, A3, B5, B4, POSTCARD, END-OPENING ENVELOPE(LONG FORMAT) 3	PAPER SIZE
404	2	PLAIN PAPER, THICK PAPER, COATED PAPER, ENVELOPE	PAPER TYPE
405	2	1, 2, 3	DOUBLE-SIDED
406	2	1, 2, 3, 4	BINDING POSITION

FIG. 14

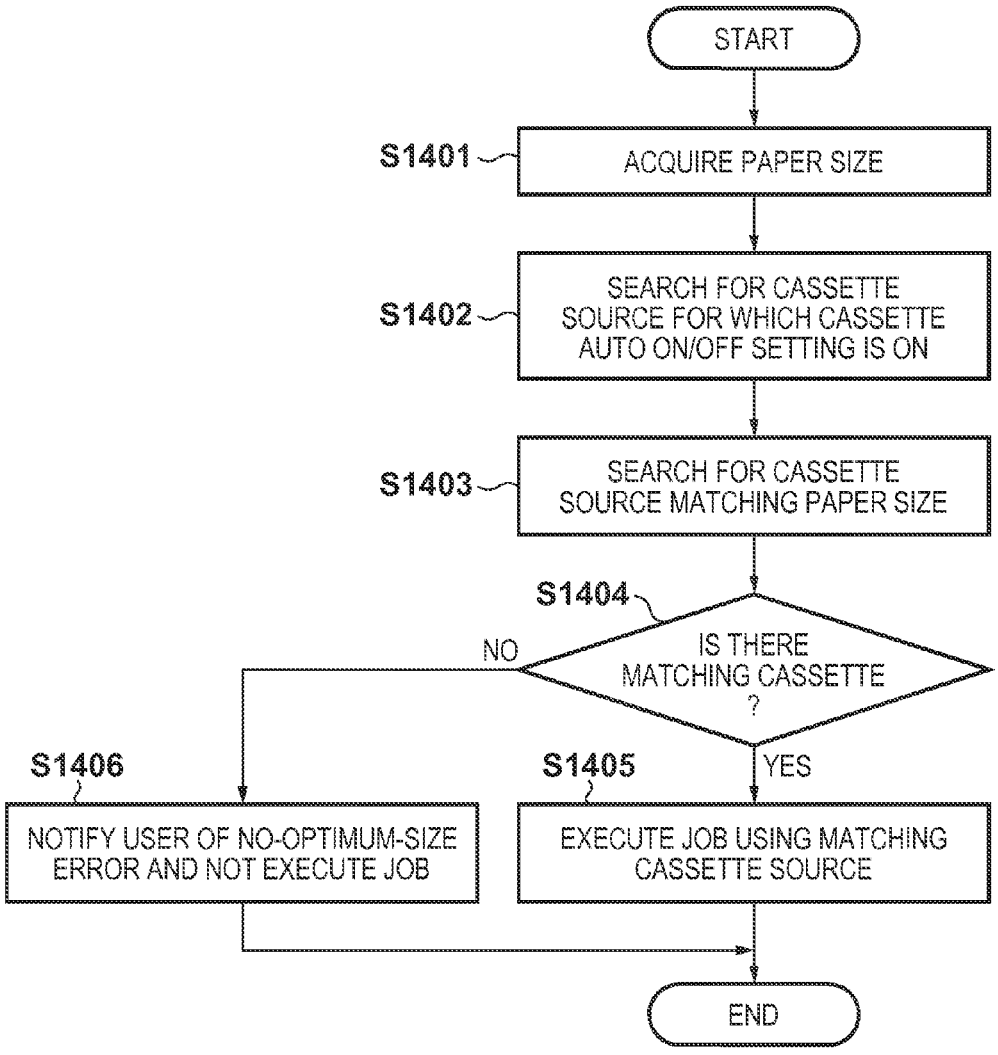

START
S1401
ACQUIRE PAPER SIZE
S1402
SEARCH FOR CASSETTE SOURCE FOR WHICH CASSETTE AUTO ON/OFF SETTING IS ON
S1403
SEARCH FOR CASSETTE SOURCE MATCHING PAPER SIZE
S1404
IS THERE MATCHING CASSETTE ?
NO
YES
S1406
NOTIFY USER OF NO-OPTIMUM-SIZE ERROR AND NOT EXECUTE JOB
S1405
EXECUTE JOB USING MATCHING CASSETTE SOURCE
END

FIG. 15A

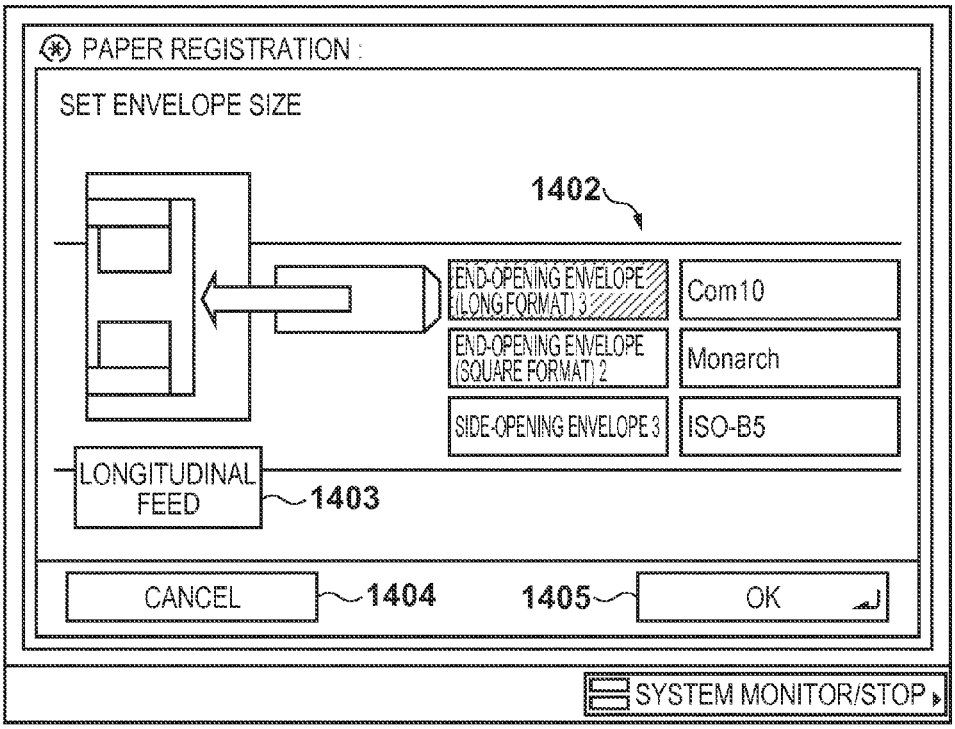


FIG. 15B

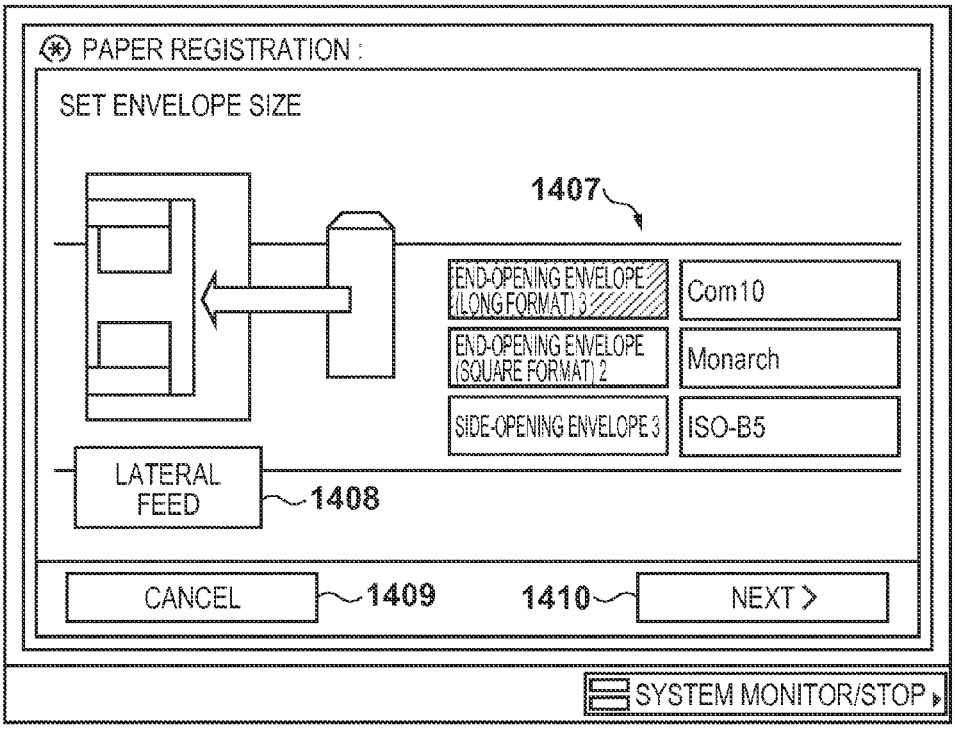


FIG. 16

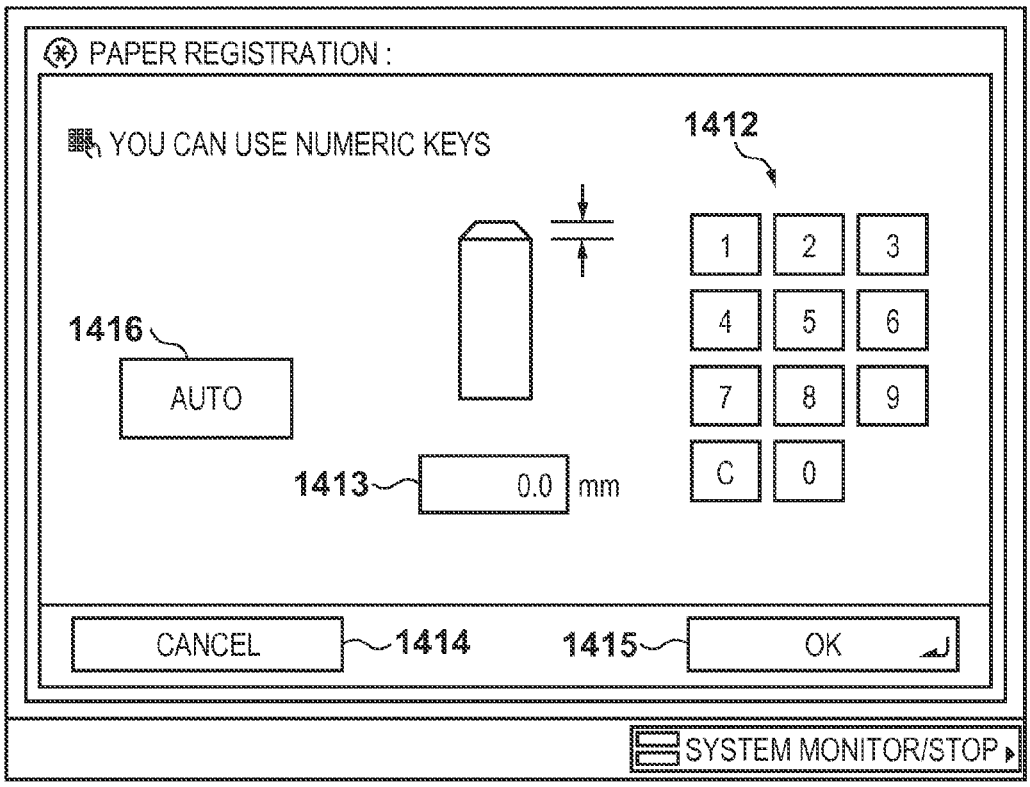

PAPER REGISTRATION :
YOU CAN USE NUMERIC KEYS
1412
1
2
3
4
5
6
7
8
9
C
0
1416
AUTO
1413
0.0
mm
CANCEL
1414
1415
OK
SYSTEM MONITOR/STOP

FIG. 17A

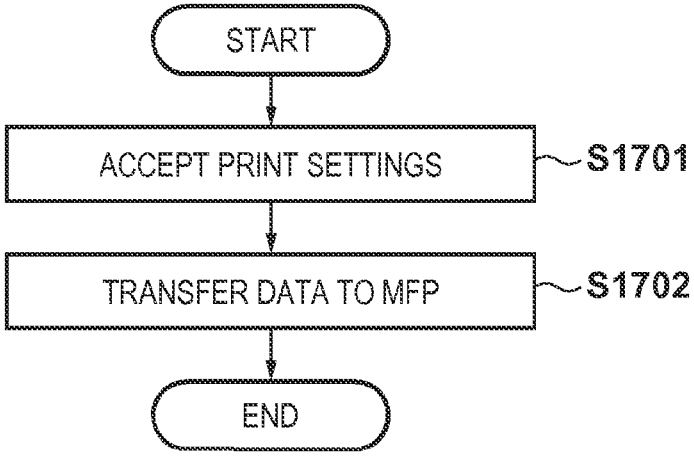


FIG. 17B

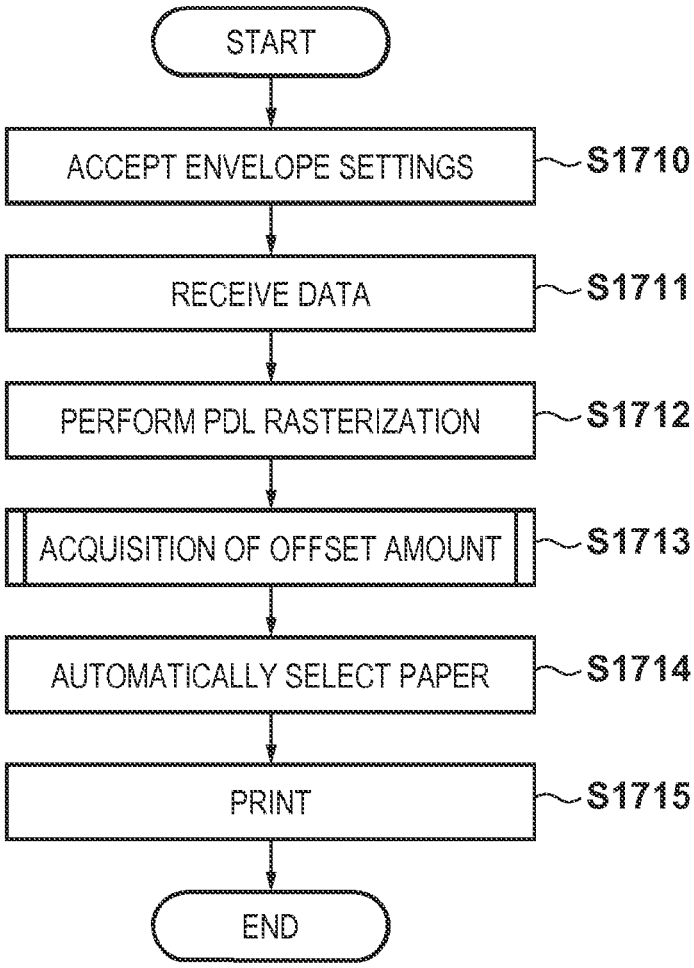


FIG. 18

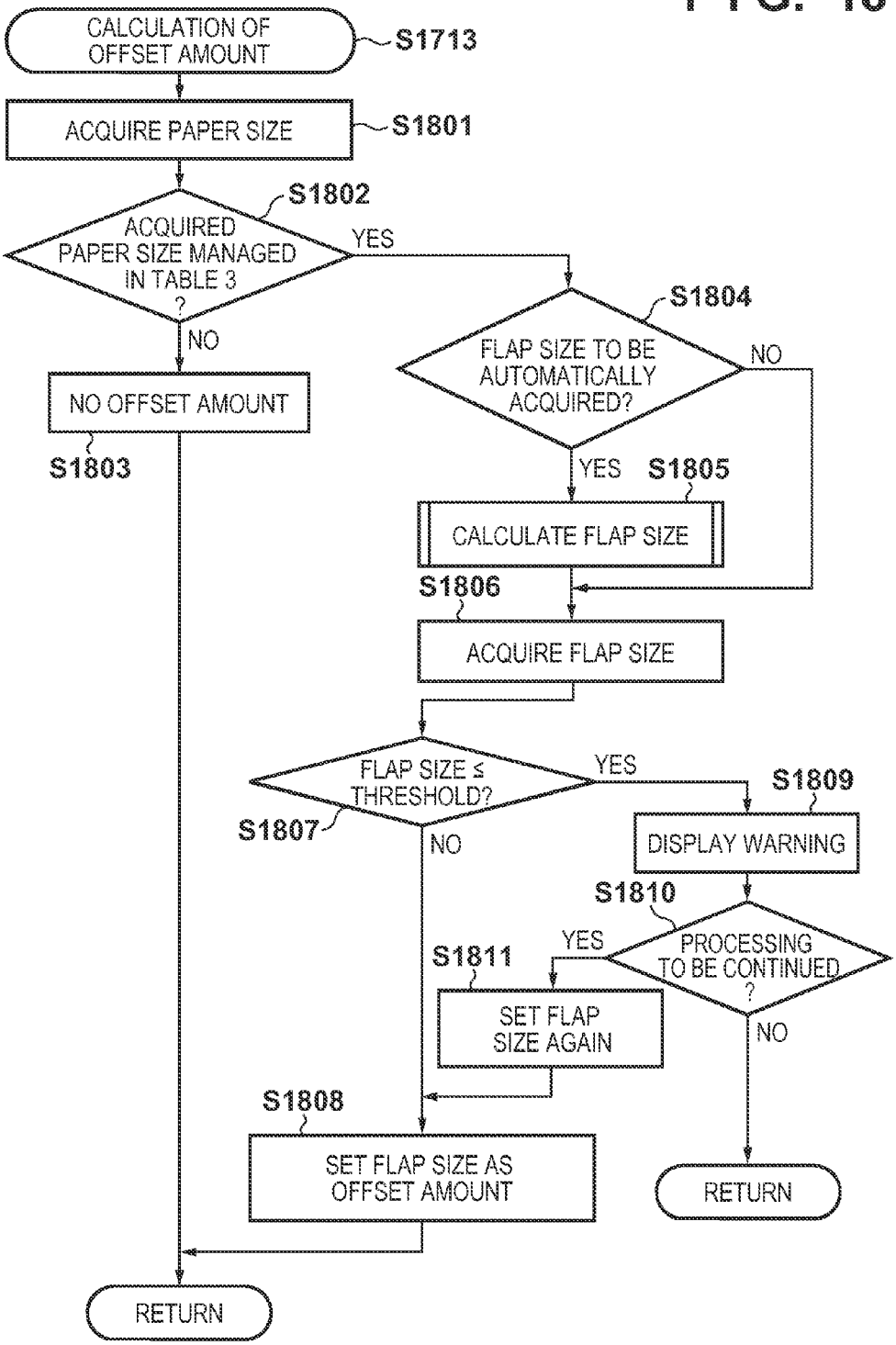

CALCULATION OF OFFSET AMOUNT
S1713
ACQUIRE PAPER SIZE
S1801
S1802
ACQUIRED PAPER SIZE MANAGED IN TABLE 3 ?
YES
NO
NO OFFSET AMOUNT
S1803
S1804
FLAP SIZE TO BE AUTOMATICALLY ACQUIRED?
NO
YES
S1805
CALCULATE FLAP SIZE
S1806
ACQUIRE FLAP SIZE
FLAP SIZE ≤ THRESHOLD?
YES
S1807
NO
S1809
DISPLAY WARNING
S1810
PROCESSING TO BE CONTINUED ?
YES
S1811
SET FLAP SIZE AGAIN
NO
S1808
SET FLAP SIZE AS OFFSET AMOUNT
RETURN
RETURN

FIG. 19

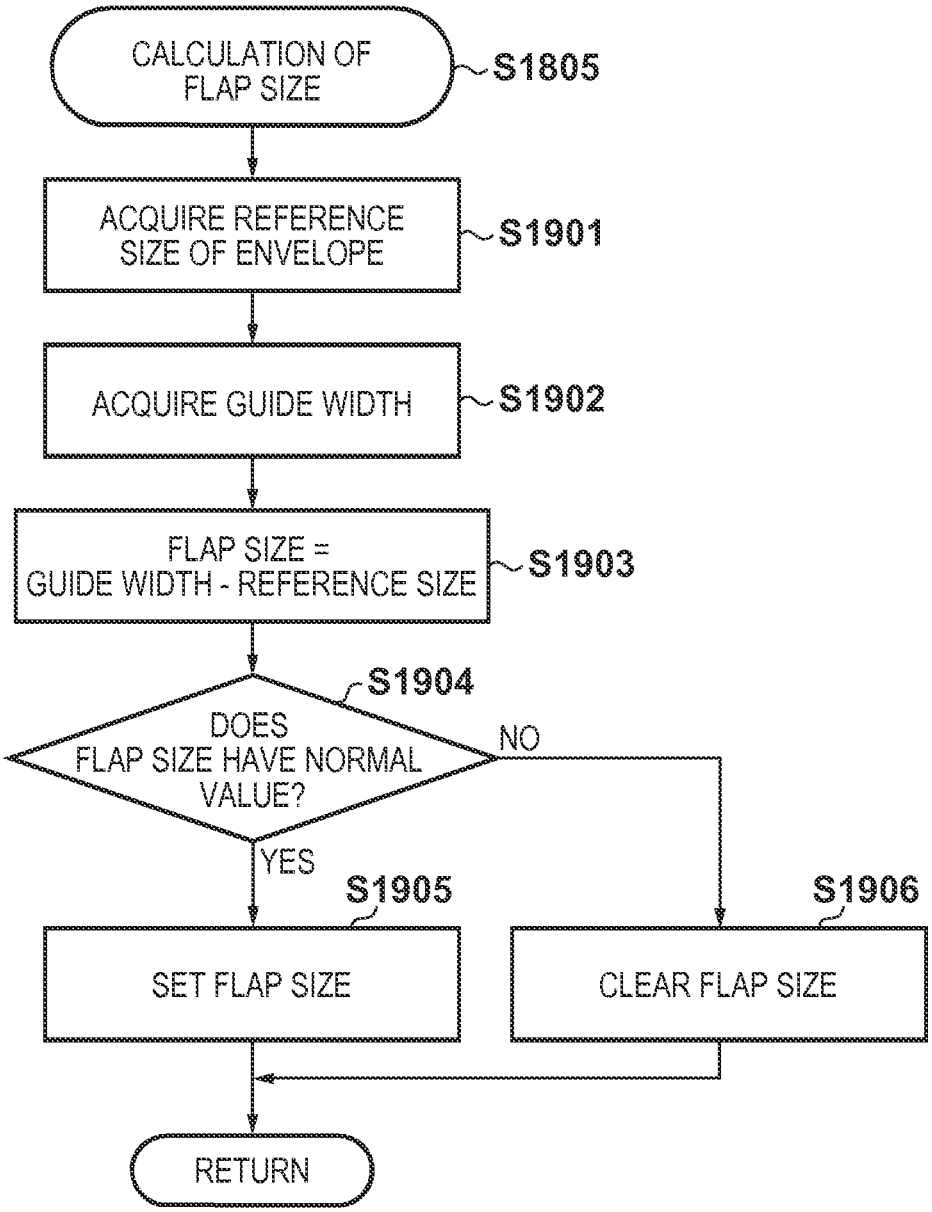

CALCULATION OF FLAP SIZE
S1805
ACQUIRE REFERENCE SIZE OF ENVELOPE
S1901
ACQUIRE GUIDE WIDTH
S1902
FLAP SIZE = GUIDE WIDTH - REFERENCE SIZE
S1903
S1904
DOES FLAP SIZE HAVE NORMAL VALUE?
NO
YES
S1905
SET FLAP SIZE
S1906
CLEAR FLAP SIZE
RETURN

FIG. 20C

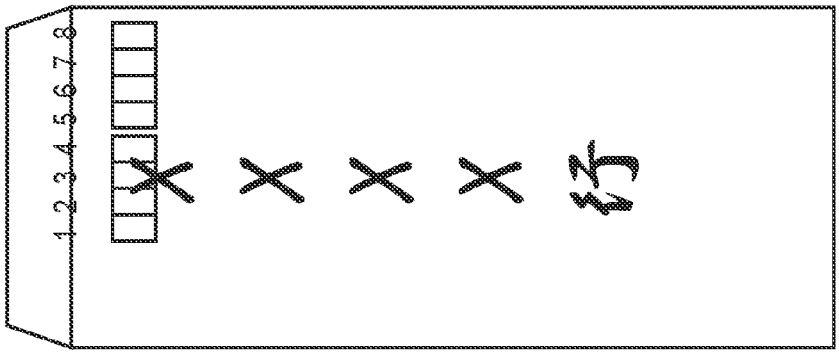


FIG. 20B

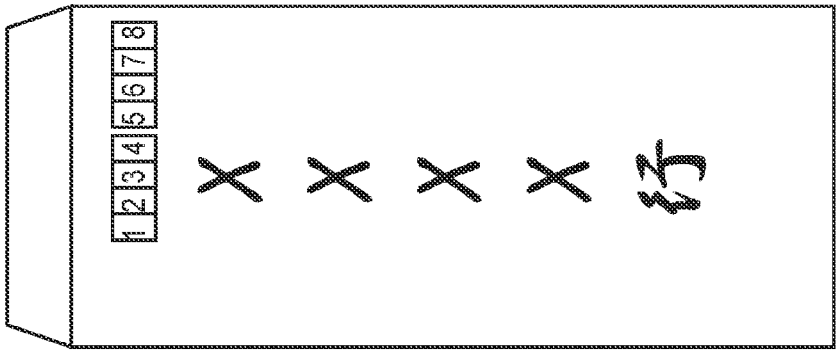


FIG. 20A

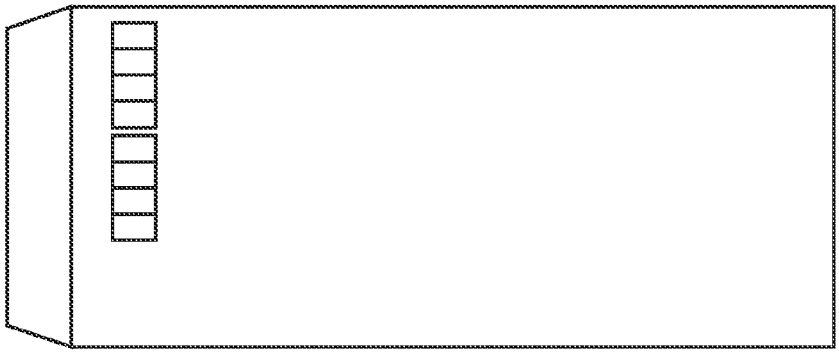


FIG. 21

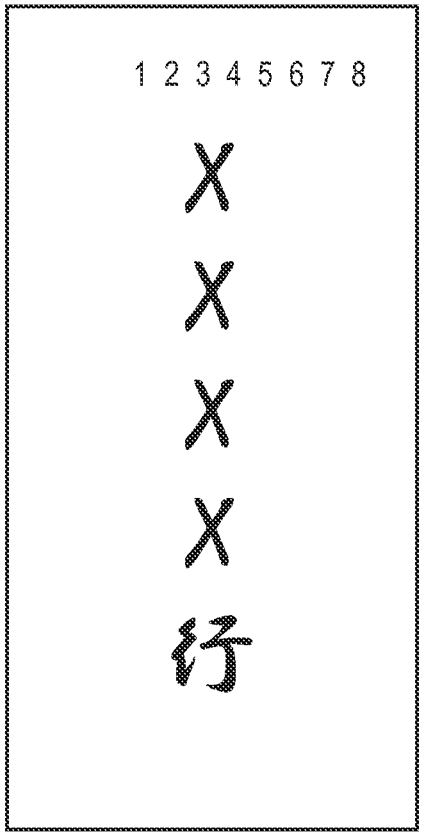
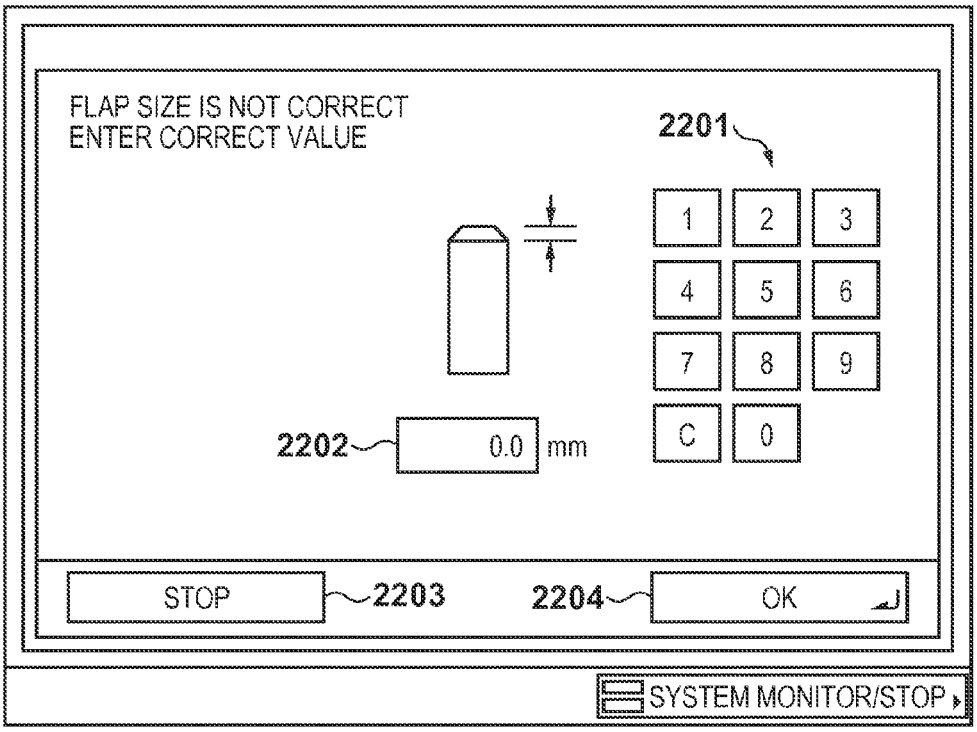


FIG. 22


FLAP SIZE IS NOT CORRECT
ENTER CORRECT VALUE
2201
1
2
3
4
5
6
7
8
9
C
0
2202
0.0
mm
STOP
2203
2204
OK
SYSTEM MONITOR/STOP

PRINTING APPARATUS, CONTROL METHOD THEREFOR, AND STORAGE MEDIUM

This application is a continuation of U.S. application Ser. No. 13/755,960, filed Jan. 31, 2013, the contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a printing apparatus capable of printing an image on paper such as an envelope, a control method therefor, and a storage medium.

2. Description of the Related Art

An image forming apparatus (printing apparatus) includes one or more paper containing units (sheet holding unit). The image forming apparatus feeds sheets contained in the paper containing unit one by one, and forms (prints) an image on the fed sheet. The size of paper contained in each paper containing unit can be set. For example, standard-sizes such as A4 and B4, and an arbitrary size such as 210 mm×290 mm can be set.

As a special standard-size, an envelope size can also be set. Paper with a projection such as the projecting piece, that is, margin (to be referred to as a flap hereinafter) of an envelope or the index portion of index paper is set so that the flap serves as the trailing end in the sub-scanning direction. With this setting, a paper area up to the flap is handled as a standard-size, and printing is performed. Also, there is known a technique of setting an envelope so that its flap is positioned in the sub-scanning direction, recognizing a flap position by a sensor when the envelope is conveyed, and suppressing image misregistration (see Japanese Patent Laid-Open No. 9-109492).

Paper longer in the sub-scanning direction than in the main-scanning direction, like an envelope, takes a long printing time when the long edge is made parallel to the conveyance direction and printing is performed (short-edge feed). The time necessary to print can be shortened by setting an envelope so that its flap comes to the end in the main-scanning direction, making the short edge of the envelope parallel to the conveyance direction, and printing (long-edge feed). In this case, an image needs to be shifted by the flap width and printed. However, since the flap width differs between envelope manufacturers, the user needs to enter a flap width, putting a burden on him.

SUMMARY OF THE INVENTION

The present invention solves the conventional problems.

The present invention provides a technique of identifying a flap size necessary to appropriately print an image on an envelope while suppressing the burden on the user.

According to one aspect of the present invention, there is provided a printing apparatus comprising: a sheet holding unit configured to hold an envelope; a detection unit configured to detect an opening width between guides for guiding an envelope held by the sheet holding unit; an identifying unit configured to identify a flap size of the envelope based on the opening width detected by the detection unit and a size set for the envelope held by the sheet holding unit; and a printing unit configured to print an image on the envelope by shifting image data based on the flap size identified by the identifying unit.

According to another aspect of the present invention, there is provided a method for controlling a printing apparatus including a sheet holding unit configured to hold an envelope, comprising: detecting an opening width between guides for guiding an envelope held by the sheet holding unit; identifying a flap size of the envelope based on the opening width detected in the detecting an opening width, and a size set for the envelope held by the sheet holding unit; and printing an image on the envelope by shifting image data based on the flap size identified in the identifying a flap size.

According to the present invention, a flap size necessary to appropriately print an image on an envelope can be identified while suppressing the burden on the user.

Further features of the present invention will become apparent from the following description of exemplary embodiments (with reference to the attached drawings).

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a view showing the arrangement of a multi-function peripheral (MFP) serving as an example of an image forming apparatus according to an embodiment;

FIG. **2** is a block diagram showing the hardware arrangement of a controller according to the embodiment;

FIG. **3** is a schematic view showing the MFP according to the embodiment;

FIG. **4** is a plan view showing the operation unit of the MFP according to the embodiment;

FIGS. **5**A to **5**D are views showing a manual feed tray when viewed from above;

FIGS. **6**A and **6**B are views each showing an operation screen according to the embodiment;

FIGS. **7**A and **7**B are views each showing an operation screen according to the embodiment;

FIGS. **8**A and **8**B are views each exemplifying a UI screen displayed on the display unit of the operation unit of the MFP according to the embodiment;

FIG. **9** is a view for explaining the structure of a scanner;

FIG. **10** is a view for explaining the arrangement of a printer unit;

FIG. **11** is a view exemplifying a UI screen for selecting a paper feed cassette subjected to auto paper selection;

FIG. **12** is a view for explaining the data structure of a print job in the embodiment;

FIG. **13** is a table exemplifying attributes according to the embodiment;

FIG. **14** is a flowchart showing an operation of automatically switching a cassette source in the MFP according to the embodiment when sheets run out during printing by a print job for which a paper size is designated;

FIGS. **15**A and **15**B are views for explaining an envelope size setting method according to the embodiment;

FIG. **16** is a view exemplifying a flap size setting screen;

FIGS. **17**A and **17**B are flowcharts for explaining a printing sequence of PDL data on an envelope by a print job according to the embodiment;

FIG. **18** is a flowchart for explaining offset amount acquisition processing in step **S1713** of FIG. **17**B;

FIG. **19** is a flowchart for explaining processing in step **S1805** of FIG. **18**;

FIGS. **20**A to **20**C are views for explaining an envelope of end-opening envelope (long format) **3**, and examples of printing an image on the envelope;

FIG. **21** is a view showing an image of image data rasterized in a memory when end-opening envelope (long format) **3** is set as the image size; and

FIG. **22** is a view exemplifying a UI screen displayed on the display unit of the operation unit when a flap size is abnormal.

DESCRIPTION OF THE EMBODIMENTS

Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings. It should be noted that the following embodiments are not intended to limit the scope of the appended claims, and that not all the combinations of features described in the embodiments are necessarily essential to the solving means of the present invention.

FIG. **1** is a view showing the arrangement of a multifunction peripheral (MFP) serving as an example of a printing apparatus according to an embodiment of the present invention. Although the embodiment will be explained using the MFP having a plurality of functions as an example of the printing apparatus, the printing apparatus may be a single-function peripheral (SFP) having a single function.

Referring to FIG. **1**, a controller **101** controls the MFP, and has a hardware arrangement shown in FIG. **2**. A scanner **102** is controlled by the controller **101**, and scans a document to create image data of the document image. A printer engine **103** is a printer engine complying with the electrophotographic method in the embodiment. The printer engine **103** prints an image on a printing medium (sheet such as paper or envelope) under the control of the controller **101**. A finisher **104** is connectable to the printer engine **103**, and can perform, for example, staple processing collectively for a plurality of printing media (for example, sheets) output from the printer engine **103**. The controller **101** also controls the finisher **104**. A network (Ethernet) interface **105** provides two-way communication with the controller **101** via itself, and can connect the MFP to a PC **107** serving as an external apparatus via a network. An operation unit **106** provides a user interface, includes a display unit and keyboard, displays information from the controller **101**, and notifies the controller **101** of an instruction from the user.

FIG. **2** is a block diagram showing the hardware arrangement of the controller **101** according to the embodiment.

In the controller **101**, a CPU **201** is connected to a memory **202**, a display unit **203** and keyboard **204** of the operation unit **106**, a ROM **210**, and a storage medium (DISK) **211** via a bus **209**. Various programs and data are stored in the DISK **211** such as a hard disk or Floppy® disk, and if necessary, sequentially read out to the memory **202** and executed by the CPU **201**. The DISK **211** may be one detachable from the MFP or one incorporated in the MFP. Further, programs may be downloaded from another PC, MFP, or the like via the network and stored in the DISK **211**.

The memory **202** may have both the functions of volatile and nonvolatile memories. Alternatively, the memory **202** may have the function of a volatile memory, and the DISK **211** may have the function of a nonvolatile memory. The memory **202** may be a removable memory medium.

The CPU **201** writes display data in a display memory (not shown) to present a display on the display unit **203**. The CPU **201** receives data from the keyboard **204** or the display unit **203** serving as a touch panel, thereby accepting input of an instruction from the user. The input information is transferred to one of the memory **202**, DISK **211**, and CPU **201**, accumulated, and used for various processes. The network interface **105** is connected to the bus **209**, and the CPU **201** performs communication via the interface by loading or writing data via the network interface **105**.

Further, the printer engine **103**, finisher **104**, and scanner **102** are connected to the bus **209**. The CPU **201** reads and writes data from and in the printer engine **103**, finisher **104**, and scanner **102** to execute operations such as printing and scanning, and acquire information representing various statuses. Image data can be saved in the DISK **211** or memory **202** of the controller **101** from the scanner **102** or network interface **105**. Also, image data can be accumulated in advance in a removable memory and loaded by attaching the memory to the controller **101**. Image data accumulated in the DISK **211** can be moved or copied to the memory **202**. Various additional images (for example, a page number) can be composited with image data in the memory **202** in accordance with contents designated from the operation unit **106**. Note that the printer engine **103**, finisher **104**, and scanner **102** may exist not in the MFP but as single peripheral devices on the network, and may be controlled by the controller **101** of the MFP.

FIG. **3** is a schematic view showing the MFP according to the embodiment. Note that the same reference numerals as those in FIG. **1** denote the same parts.

The scanner **102** serving as an image input device irradiates an image on a sheet serving as a document with light, and scans a CCD line sensor to convert the document image into electrical image data. The scanner **102** determines the color and size of the document from the electrically converted image data. A printer unit **302** (printer engine **103**) serving as an image output device converts image data into an image on a sheet, prints the image on a sheet, and discharges the sheet. The print operation starts and stops in accordance with instructions from the CPU **201** of the controller **101**. Reference numerals **304** to **308** denote paper feed sources. The paper feed source **304** is a manual feed tray, and the paper feed sources **305** to **308** are paper feed cassettes (paper containing units or sheet holding units), in each of which a plurality of sheets (including envelopes) can be set. Note that the MFP can print, based on print data, an image on an envelope held in the manual feed tray **304** or the paper feed cassette.

FIG. **4** is a plan view showing the operation unit **106** of the MFP according to the embodiment.

The display unit **203** is formed from a touch panel sheet adhering to a liquid crystal display, and displays an operation screen and soft keys. When the user presses a displayed key, the display unit **203** notifies the CPU **201** of the position information.

Next, the keyboard **204** will be explained. A start key **402** is used to designate the start of a document image reading operation. An LED **403** in two, green and red colors is arranged at the center of the start key **402**, and the colors represent whether the start key **402** is available. A stop key **404** is used to stop an operation in progress. A ten-key pad **405** is formed from numeric and character buttons, and used to set a copy count and designate screen switching of the display unit **203** and the like. A user mode key **406** is pressed to make settings of the MFP.

FIGS. **5**A to **5**C are views showing the manual feed tray **304** when viewed from above.

In FIG. **5**A, the manual feed tray **304** includes guides **502** which are freely movable on rails **503**. The positions of the guides **502** can be adjusted in accordance with the size of paper to be set. FIG. **5**B shows guide positions when A4-size paper is set in the portrait direction. This represents a conveyance direction in long-edge feed described above. FIG. **5**C shows guide positions when A4-size paper is set in the landscape direction. This represents a conveyance direction in short-edge feed described above. A sensor **504** detects that paper is placed on the manual feed tray **304**. When paper is

placed on the sensor **504**, the controller **101** can detect, based on an output from the sensor **504**, that paper is set on the manual feed tray **304**.

FIG. **5**D shows the arrangement of the manual feed tray **304** when viewed from below. Members **508** are fixed to the guides **502** via the rails **503**. Members **509** are fixed to the members **508** and move in synchronism with movement of the guides **502** and members **508**. A rotation member **510** forms a rack and pinion structure with the members **509**, and rotates along with movement of the members **509**. The rotation member **510** includes a rotation angle sensor which can measure rotation of the rotation member **510**. By measuring the rotation amount of the rotation member **510**, the opening width between the guides **502** can be measured.

FIGS. **6**A to **8**B are views each exemplifying a UI screen displayed on the display unit **203** of the operation unit **106** of the MFP according to the embodiment. A method of setting the size and type of paper in a paper feed cassette from a user mode screen in FIG. **6**A will be explained with reference to FIGS. **6**A to **8**B.

When the user presses the user mode key **406** (FIG. **4**) of the operation unit **106**, a user mode screen in FIG. **6**A appears. The user can set a paper size on this operation screen. When the user presses a paper setting button **602** in a button group **601**, a screen shown in FIG. **6**B for setting the size and type of paper to be set in the paper feed cassette appears.

The screen in FIG. **6**B provides a cassette selection button group **604**. By pressing a button in the button group **604**, the user can select an arbitrary paper feed cassette. When the user selects a paper feed cassette from the button group **604** and presses a set button **605**, a screen shown in FIG. **7**A appears.

The screen in FIG. **7**A provides a standard-size setting button group **608**. By pressing a button in the button group **608**, the user can set an arbitrary standard-size for the paper feed cassette selected in FIG. **6**B. The user presses a user setting button **609** to set paper of an arbitrary size. When the user presses the user setting button **609**, a screen shown in FIG. **7**B appears.

The user presses an X button **614** in FIG. **7**B to set a width (dimension in the lateral direction). With a numeric button group **616**, the user sets the width value. The user presses a Y button **615** to set a length (dimension in the longitudinal direction). With the numeric button group **616**, the user sets the length value. The user presses a cancel button **617** to cancel settings on the screen. When the user presses the cancel button **617**, the screen in FIG. **7**B returns to one in FIG. **7**A without any setting. The user presses an OK button **618** to end input of dimensions in the longitudinal and lateral directions, and set these values. When the user presses the OK button **618**, the screen in FIG. **7**B returns to one in FIG. **7**A.

The user presses an envelope button **610** in FIG. **7**A to set an envelope size. When the user presses the envelope button **610**, a screen in FIG. **8**A appears. The screen in FIG. **8**A provides an envelope size setting button group **620**. By pressing a button in the button group **620**, the user can set the standard-size of an envelope. A button corresponding to "end-opening envelope (long format) **3**" is selected as a default. The default changes depending on the destination ("destination" is information indicating a country or region where a device is installed, and is saved in either the memory **202** or DISK **211** of the controller **101**). The default is "end-opening envelope (long format) **3**" for Japan and "Com10" for overseas. The user presses a cancel button **621** to cancel settings on the screen. When the user presses the cancel button **621**, the screen in FIG. **8**A returns to one in FIG. **7**A without any setting. The user presses an OK button **622** to decide an envelope size. When the user presses the OK button **622**, an envelope size is set, and the screen in FIG. **8**A returns to one in FIG. **7**A.

When the user sets a standard-size or user-set size as the envelope size and then presses a "Next" button **612** in FIG. **7**A, a screen in FIG. **8**B appears. This screen provides a paper type setting button group **624**. By pressing a button in the button group **624**, the user can set a paper type. The user presses a cancel button **625** to cancel settings on the screen. When the user presses the cancel button **625**, the screen in FIG. **8**B returns to one in FIG. **7**A without any setting. The user presses an OK button **626** to decide a paper type. When the user presses the OK button **626**, a paper type is set, and the screen in FIG. **8**B returns to one in FIG. **6**B. Further, when the user wants to set another paper feed source, he selects a paper feed cassette again from the cassette selection button group **604**, and repeats setting processing. If no setting is made, the user presses a close button **606**, and then the screen returns to one in FIG. **6**A.

Table 1 below exemplifies information set for each paper feed cassette according to the embodiment. After the end of paper setting processing, data for one of cassette 1 to cassette 4 in Table 1 is updated. The data can be saved in either the memory **202** or DISK **211** of the controller **101**.

TABLE 1

Cassette Source	Paper Size	X Size	Y Size	Paper Type
Cassette 1	A4	—	—	Plain paper
Cassette 2	End-opening envelope (long format) 3	—	—	Thick paper
Cassette 3	User setting	200 mm	297 mm	Plain paper
Cassette 4	B4	—	—	Plain paper
Manual Feed	Unset	—	—	Unset

Next, a method of setting the size and type of paper when paper is set on the manual feed tray **304** will be explained. When the user sets paper on the manual feed tray **304** and sets a state as shown in FIG. **5**B or **5**C, the sensor **504** detects this and the printer engine **103** notifies the controller **101** that paper has been set. Upon receiving this notification, the controller **101** displays the screen shown in FIG. **7**A on the display unit **203** of the operation unit **106**. In this case, a Back button **611** is hidden. As described above, when the user sets a standard-size or user-set size as the envelope size on this screen and then presses the "Next" button **612**, the screen in FIG. **8**B appears. As described above, this screen provides the paper type setting button group **624**. The user can set a paper type by pressing a button in the paper type setting button group **624**, or return the screen in FIG. **8**B to one in FIG. **7**A by pressing the cancel button **625**. When the user presses the OK button **626** after the end of setting, the paper registration screen disappears, and the size and paper type in "Manual Feed" of Table 1 are updated from "unset" to an actually set size and type. When the manual feed tray **304** runs out of sheets, the sensor **504** detects this, and the printer engine **103** notifies the controller **101** that sheets have run out. Upon receiving this notification, the controller **101** updates each item in "Manual Feed" of Table 1 to "unset".

FIG. **9** is a view for explaining the structure of the scanner **102**.

Information on a document **703** is read while the document **703** is moved relative to an exposure unit **713** of a document reading device **719**. The document **703** is set on a document tray **702**. A document feed roller **704** is paired with a separa-

tion pad **705**, and conveys the documents **703** one by one. The conveyed document **703** is sent into the scanner by intermediate rollers **706**, conveyed by a large roller **708** and first driven roller **709**, and further conveyed by the large roller **708** and a second driven roller **710**. The document **703** conveyed by the large roller **708** and second driven roller **710** passes between a sheet-fed document glass **712** and a document guide plate **717**, and conveyed by the large roller **708** and a third driven roller **711** via a jump table **718**. The document **703** conveyed by the large roller **708** and third driven roller **711** is discharged by a pair of document discharge rollers **707**. Note that the document **703** is conveyed between the sheet-fed document glass **712** and the document guide plate **717** to contact the sheet-fed document glass **712** by the document guide plate **717**.

When the document **703** passes on the sheet-fed document glass **712**, the exposure unit **713** exposes a surface of the document **703** that contacts the sheet-fed document glass **712**. The light reflected by the document **703** travels to a mirror unit **714**. The traveling reflected light is condensed through a lens **715**, and converted into an electrical signal by a CCD sensor **716**. The electrical signal is transferred to the controller **101**.

FIG. **10** is a view for explaining the arrangement of the printer unit **302**.

FIG. **10** exemplifies a full-color printing apparatus. A primary charger **811** charges a photosensitive drum **801** to a potential of a specific polarity, and an exposure unit (not shown) exposes a position indicated by an arrow **812** in accordance with an instruction from the controller **101**. As a result, an electrostatic latent image corresponding to the first color component is formed. After that, the electrostatic latent image is developed using one of four developing units of a developing device **802**. An intermediate transfer belt **803** is driven to be conveyed in a direction indicated by an arrow. When the image of the first color component formed on the photosensitive drum **801** passes through a contact portion between the photosensitive drum **801** and the intermediate transfer belt **803**, it is transferred onto the intermediate transfer belt **803** by an electric field formed by a primary transfer roller **810**. A cleaning device **804** cleans the surface of the photosensitive drum **801** after the end of transfer onto the intermediate transfer belt **803**. This processing is sequentially repeated to transfer images of four colors onto the intermediate transfer belt **803** and superimpose them on each other, thereby forming a color image. When an image of a single color is formed, transfer processing is performed only once. The image transferred onto the intermediate transfer belt **803** is printed onto paper fed from a paper feed cassette **805** by a secondary transfer roller **809**. A fixing unit **806** heats the paper and fixes the image printed on it. The paper after fixing passes through conveyance rollers, is discharged outside the apparatus from a discharge port **807**, and stacked on a discharge tray **813**. When double-sided printing is performed, paper is circulated through a reverse path **808** and print processing is repeated.

FIG. **11** is a view exemplifying a UI screen for selecting a paper feed cassette subjected to auto paper selection. Auto paper selection is processing of automatically selecting a paper feed source serving as the source of paper to be used in printing from a plurality of paper feed sources by the CPU **201** in accordance with the document size and user settings.

When the user presses the user mode key **406** of the operation unit **106**, the user mode screen in FIG. **6**A appears. When the user presses a button **627** corresponding to a cassette auto ON/OFF setting in the button group **601**, the screen shown in FIG. **11** appears. This screen displays equipped paper feed cassettes and the size of paper set in each paper feed cassette. With a selection button group **902**, the user can designate whether or not to set the paper feed cassette as a cassette to be selected automatically. A cassette source for which "ON" is pressed becomes a cassette subjected to auto paper selection. A cassette for which "OFF" is pressed becomes a cassette not subjected to auto paper selection. When the user presses an OK button **903**, setting ends, and the screen in FIG. **11** returns to one in FIG. **6**A.

Table 2 below exemplifies data representing auto paper selection of paper feed cassettes and a manual feed tray according to the embodiment.

After the end of cassette auto ON/OFF setting processing, data for one of cassette 1 to cassette 4 and the manual feed tray in Table 2 is updated in correspondence with the setting. The data can be saved in either the memory **202** or DISK **211** of the controller **101**. This data is used when automatically selecting a cassette. In the example of Table 2, it is set to use all cassettes 1 to 4 in auto paper switching and not to use only the manual feed tray in auto paper switching.

TABLE 2

Cassette	State
Cassette 1	ON
Cassette 2	ON
Cassette 3	ON
Cassette 4	ON
Manual Feed	OFF

FIG. **12** is a view for explaining the data structure of a print job in the embodiment. This data is generated by an application in the device upon receiving an instruction to execute a print job.

The entity of the job is represented by successively arranging a plurality of sets each of an attribute ID **1101**, attribute value size **1102**, and attribute value **1103**. When a job contains data, it holds a value representing data as an attribute ID, the size of a file name as an attribute value size, and the file name of a file holding document data as an attribute value, as represented by **1107**, **1108**, and **1109**. Each attribute value contains a data format (for example, PDL used), copy count, cassette source, paper size used in printing, and designation of finishing processing.

FIG. **13** is a table exemplifying attributes according to the embodiment.

An attribute ID **1301** represents the identification number (ID) of an attribute. A type ID **1302** represents the type (size) of an ID, which is set in advance such that "1" is an undefined length and "2" is 1 byte. A value **1303** represents a possible value and has a meaning as represented by a meaning **1304**. The attributes shown in FIG. **13** are merely examples, and there are various other attributes. A job is formed by setting these values in the attribute ID, attribute size, and attribute value of a job shown in FIG. **12**.

FIG. **14** is a flowchart showing an operation of automatically switching a cassette source in the MFP according to the embodiment when sheets run out during printing by a print job for which a paper size is designated. Note that a program for executing this processing is stored in the ROM **210** or DISK **211**, loaded in the memory **202** in execution, and executed under the control of the CPU **201**.

When auto cassette switching processing starts after a job is interrupted due to the absence of sheets, the CPU **201** acquires a paper size requested of processing from an attribute designated by the job in step **S1401**. The process advances to step **S1402**, and the CPU **201** searches for a cassette whose state is set to ON in Table 2. The process then

advances to step S1403, and the CPU 201 compares the paper size acquired in step S1401 with the paper sizes of respective cassettes whose states are ON in step S1402, and determines whether there is a cassette matching the paper size. For example, when the paper size acquired in step S1401 is B4, it is detected that B4-size sheets are set in cassette 4 out of target cassettes 1 to 4 (see Table 1). If all cassette auto ON/OFF settings are "OFF" in Table 2 or a cassette containing B4-size sheets does not exist in Table 1, there is no matching cassette.

In step S1404, the CPU 201 determines whether there is a matching cassette. If there is a matching cassette, the process advances to step S1405, and the CPU 201 restarts the job by using the cassette source matching the size. If the CPU 201 determines in step S1404 that there is no matching cassette, the process advances to step S1406, and the CPU 201 notifies the user that there is no usable size, and keeps interrupting the job.

An envelope size setting method according to the embodiment will be explained with reference to FIGS. 15A, 15B, and 16.

When paper is set on the manual feed tray 304, the operation unit 106 displays the screen in FIG. 7A. If the user presses the envelope button 610 on this screen, a screen in FIG. 15A appears. The screen provides an envelope size setting button group 1402. By pressing a button in the button group 1402, the user can set an envelope size. With the button, end-opening envelope (long format) 3 is selected as a default. When the user presses a "longitudinal feed" button 1403 in the screen, the screen changes to a setting screen shown in FIG. 15B for longitudinal feed in which an envelope is printed with its short edge set parallel to the main-scanning direction. Similarly, when the user presses a "lateral feed" button 1408 in the screen of FIG. 15B, the screen changes to a lateral feed setting screen shown in FIG. 15A. The screens in FIGS. 15A and 15B include the envelope size setting button group 1402 and an envelope size setting button group 1407, respectively. By pressing a button in these button groups, the user can set an envelope size. The user presses a cancel button 1404 or 1409 to cancel settings on the screen. When the user presses the cancel button 1404 or 1409, the setting screen returns to the screen in FIG. 7A without any setting on the setting screen.

When the user presses an OK button 1405 in the envelope lateral feed screen of FIG. 15A, setting of an envelope paper size is executed and the screen disappears. The envelope longitudinal feed screen in FIG. 15B displays not the OK button but a "Next" button 1410. When the user presses the "Next" button 1410, the screen changes to a flap size setting screen in FIG. 16.

This screen includes a numeric value input area 1413 for setting a flap size. By using a numeric key group 1412, the user can enter a flap size setting value to the numeric value input area 1413. As a value in the numeric value input area 1413 in the flap size setting screen, a flap size which has been set for the selected envelope size is acquired from a memory having the data structure shown in Table 3, and displayed. Hence, a flap size which has been set previously in association with the envelope size is displayed. The user presses a cancel button 1414 to cancel settings on the screen. When the user presses the cancel button 1414, the screen in FIG. 16 returns to one in FIG. 15B.

An auto button 1416 is arranged on the flap size setting screen of FIG. 16. When the user presses the auto button 1416, "auto" is displayed in the numeric value input area 1413, and the auto button 1416 is highlighted. This means that a flap size is acquired automatically. When the user presses the numeric key group 1412 while the auto button 1416 is highlighted, the highlight of the auto button 1416 is canceled, and an entered numeric value is displayed in the numeric value input area 1413.

Table 3 below shows a data structure used in processing according to the embodiment. After the end of envelope setting processing, data of either the flap size or auto flag in Table 3 is updated. The data can be saved in either the memory 202 or DISK 211 of the controller 101. Assume that "reference size" in Table 3 is set in advance in association with an envelope size.

TABLE 3

Envelope Size	Reference Size	Auto Flag	Flap Size
1: COM10	104.8 mm		0.0 mm
2: Monarch	98.4 mm		0.0 mm
3: ISO-C5	229 mm		0.0 mm
4: End-opening Envelope (Long Format) 3	235 mm		0.0 mm
5: Side-opening Envelope 3	120 mm		0.0 mm
6: End-opening Envelope (Square Format) 2	332 mm		0.0 mm

FIGS. 17A and 17B are flowcharts for explaining a printing sequence of PDL data on an envelope by a print job according to the embodiment. FIG. 17A shows processing by the PC 107, and FIG. 17B shows processing by the MFP according to the embodiment. Note that the processing shown in the flowchart of FIG. 17A is implemented by reading out a program stored in the ROM (not shown) of the PC 107 and executing it by the CPU (not shown) of the PC 107. Also, the processing shown in the flowchart of FIG. 17B is implemented by reading out a program stored in the ROM 210 and executing it by the CPU 201.

First, in step S1701 of FIG. 17A, the PC 107 accepts the print settings of a PDL image output job from the user. The print setting contents include the copy count, paper size (envelope size in printing on an envelope), single-sided/double-sided, page output order, sort output, and stapling/no-stapling. Then, the process advances to step S1702, and the PC 107 accepts a print instruction from the user, and converts code data to be printed into so-called PDL data (print data) by using driver software installed in the PC 107. The PC 107 transfers the PDL data to the controller 101 via the network interface 105 together with the print setting parameters set in step S1701.

Next, processing by the MFP will be explained with reference to FIG. 17B.

In step S1710, the CPU 201 detects that, for example, an envelope of end-opening envelope (long format) 3 in FIG. 20A is set on the manual feed tray 304. The user selects the "longitudinal feed" 1403 in FIG. 15A, and sets "end-opening envelope (long format) 3" as the envelope size in FIG. 15B. In response to this, the items of "Manual Feed" in Table 1 are updated as shown on the upper side of Table 4.

When it is set to automatically acquire a flap size in flap size setting, the items of "end-opening envelope (long format) 3" in Table 3 are updated as shown on the lower side of Table 4. A comparison between Table 3 and Table 4 reveals that "auto flag" representing to automatically set the flap size of "end-opening envelope (long format) 3" is updated to "Yes" in Table 4.

TABLE 4

Cassette Source	Paper Size	X Size	Y Size	Paper Type
Manual Feed	End-opening envelope (long format) 3	—	—	Envelope

Envelope Size	Reference Size	Auto Flag	Flap Size
4: End-opening Envelope (Long Format) 3	235 mm	Yes	0.0 mm

In step S1711, the CPU **201** receives the PDL data transferred from the PC **107** via the network interface **105**. The process advances to step S1712, and the CPU **201** rasterizes the PDL data into image data based on the print setting parameters. Rasterization into image data is executed in the memory **202**.

FIG. **21** is a view showing an image of image data rasterized in the memory when end-opening envelope (long format) **3** is set as the image size.

End-opening envelope (long format) **3** is defined by a size of 120 mm×235 mm. Image data of a size corresponding to this size is rasterized in the memory **202**.

After that, the process advances to step S1713, and the CPU **201** acquires an offset amount based on the paper size (envelope size) designated by the PDL job. The offset amount acquisition processing will be described in detail with reference to the flowchart of FIG. **18**.

The process advances to step S1714, and the CPU **201** selects a paper feed source matching the acquired paper size. Since the designated paper size is end-opening envelope (long format) **3**, the CPU **201** selects a paper feed source (manual feed tray in this case) in which an envelope of end-opening envelope (long format) **3** is set, and acquires a paper feed direction set for the paper feed source.

The process advances to step S1715, and the CPU **201** controls the printer engine **103** to perform printing control based on image data. At this time, the image is printed by shifting the image data output position by the offset amount in the sub-scanning direction. Accordingly, a printing result as shown in FIG. **20**B can be acquired. If the image data output position is not shifted by the offset amount, the printing result becomes one as shown in FIG. **20**C in which the positions of the address and postal code shift from correct positions. This is because, if an image rasterized in the memory **202** is printed on an envelope with its upper end aligned with the upper end of the envelope, similar to printing an image on paper other than an envelope, the image is not printed at a correct position owing to the presence of the flap of the envelope.

FIG. **18** is a flowchart for explaining offset amount acquisition processing in step S1713 of FIG. **17**B. This processing is implemented by reading out a program stored in the ROM **210** and executing it by the CPU **201**.

First, in step S1801, the CPU **201** acquires a paper size designated by the PDL job from attributes. The process advances to step S1802, and the CPU **201** determines whether the acquired paper size coincides an envelope size managed in Table 3. If no coincident size exists in Table 3 in step S1802, the process advances to step S1803, the CPU **201** determines that no offset amount is set, and the process returns to the processing in FIG. **17**B. If a coincident size exists in Table 3 in step S1802, the process advances to step S1804, and the CPU **201** determines whether it is set to automatically acquire a flap size, that is, the auto flag is "Yes". If the auto flag is set to be "Yes", the process advances to step S1805; if it is set to be "No", to step S1806. In step S1805, the CPU **201** calculates a flap size based on the reference size in Table 3 and the opening width between the guides **502** (FIG. **5**D).

FIG. **19** is a flowchart for explaining processing in step S1805 of FIG. **18**.

In step S1901, by looking up Table 3, the CPU **201** acquires a reference size corresponding to the paper size (envelope size) acquired in step S1801. For example, when the envelope size is end-opening envelope (long format) **3**, "235 mm" is acquired as the reference size. The process advances to step S1902, and the CPU **201** acquires the opening width between the guides **502**. More specifically, the opening width between the guides **502** is acquired from the output value of the rotation angle sensor of the rotation member **510**. At this time, the opening width between the guides **502** can be acquired by looking up, for example, a table describing the relationship between the output value of the rotation angle sensor and the opening width between the guides **502**. The process advances to step S1903, and the CPU **201** calculates a flap size. More specifically, the CPU **201** sets, as the flap size, a difference calculated by subtracting the reference size acquired in step S1901 from the opening width between the guides **502** that has been acquired in step S1902.

Then, the process advances to step S1904, and the CPU **201** determines whether the flap size calculated in step S1903 is a value within a normal range. When paper (envelope) is not appropriately set on the manual feed tray **304** or the guides **502** are excessively opened with respect to the paper width, the opening width acquired in step S1902 may not indicate a normal value. In consideration of this, when the flap size calculated in step S1903 is smaller than a predetermined lower limit value or larger than a predetermined upper limit value, the CPU **201** determines that the flap size is not a normal value. If the CPU **201** determines that the flap size is a normal value, it advances the process to step S1905; if NO, to step S1906. In step S1905, the CPU **201** updates the data shown in Table 3 by using the flap size calculated in step S1903. For example, when the flap size calculated in step S1903 is 30 mm, the items of end-opening envelope (long format) **3** in Table 3 are updated as shown in Table 5. In step S1906, the CPU **201** discards the flap size calculated in step S1903. Also, in step S1906, the CPU **201** sets the flap size in Table 3 to be 0 mm, in order to ensure consistency with steps S1807 to S1811 of FIG. **18** (to be described later). After the end of processing in step S1905 or S1906, the CPU **201** ends the flap size calculation processing in step S1805, and advances the process to step S1806 of FIG. **18**. In this manner, the CPU **201** identifies the flap size of the envelope (set on the manual feed tray **304**).

TABLE 5

Envelope Size	Reference Size	Auto Flag	Flap Size
4: End-opening Envelope (Long Format) 3	235 mm	Yes	30.0 mm

In step S1806, the CPU **201** acquires a flap size. The flap size acquired here is a flap size manually entered by the user via the screen of FIG. **16**, or a flap size calculated by the CPU **201** in step S1805. The flap size serves as an offset amount candidate. When no flap size is set, the flap size is 0 mm and the offset amount candidate becomes 0 mm. At this time, if the flap size is equal to or lower than a given threshold (for example, equal to or lower than 0 mm), the CPU **201** may determine that this flap size is abnormal, and interrupt the job.

This processing is implemented by performing processes in steps S1809 to S1811. If the job is not interrupted, the CPU 201 performs processing in step S1808.

In step S1807, the CPU 201 determines whether the flap size is equal to or smaller than the threshold. If the flap size is equal to or smaller than the threshold, the process advances to step S1809, and the CPU 201 interrupts the job and displays a screen shown in FIG. 22 on the display unit 203 of the operation unit 106.

FIG. 22 is a view exemplifying a UI screen displayed on the display unit 203 of the operation unit 106 when a flap size is abnormal.

In step S1809, the CPU 201 displays the screen shown in FIG. 22 on the display unit 203, notifies the user that the flap size is abnormal, and prompts him to select whether to continue the job or set again the flap size. If the user wants to continue the processing, the current flap size is displayed in a flap size display area 2202, and the user enters a normal value by using a ten-key pad 2201. When the user presses an OK button 2204 after entering the flap size, the CPU 201 sets the entered value as the flap size, and updates (sets again) the flap size in Table 3 (step S1811). If the user wants to stop the job, he presses a stop button 2203, and the CPU 201 ends the job ("NO" in step S1810).

If the CPU 201 determines in step S1807 that the flap size is larger than the threshold, the process advances to step S1808, and the CPU 201 sets the flap size acquired in step S1806 as the offset amount.

If the CPU 201 determines in step S1802 that no coincident size exists, the process advances to step S1803, and the CPU 201 sets the offset amount to be 0 mm, continues the processing, and returns to the processing in FIG. 17B.

As described above, by detecting the opening width between the guides 502, a flap size corresponding to a standard envelope size can be automatically acquired. Even if, for example, a job for image data of a size not containing a flap size is input as a PDL job from a PC or the like, an image can be printed at an appropriate position on an envelope in consideration of the flap.

In the above-described embodiment, a flap size is automatically calculated in printing. However, a flap size may be calculated when paper is set. More specifically, when the user presses the auto button 1416 in FIG. 16, the calculation processing in FIG. 19 may be executed. In this case, the processes in steps S1804 and S1805 of FIG. 18 become unnecessary. At the start of the processing in FIG. 17B, the flap size in Table 3 has already been set, and the processing can proceed similarly to a case in which a flap size is set manually.

Other Embodiments

Aspects of the present invention can also be realized by a computer of a system or apparatus (or devices such as a CPU or MPU) that reads out and executes a program recorded on a memory device to perform the functions of the above-described embodiment(s), and by a method, the steps of which are performed by a computer of a system or apparatus by, for example, reading out and executing a program recorded on a memory device to perform the functions of the above-described embodiment(s). For this purpose, the program is provided to the computer for example via a network or from a recording medium of various types serving as the memory device (for example, computer-readable medium).

While the present invention has been described with reference to exemplary embodiments, it is to be understood that the invention is not limited to the disclosed exemplary embodiments. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures and functions.

This application claims the benefit of Japanese Patent Application No. 2012-036762, filed Feb. 22, 2012, which is hereby incorporated by reference herein in its entirety.

What is claimed is:

1. A printing apparatus comprising:
- a holding unit configured to hold an envelope having a flap;
- guides configured to guide the envelope held by the holding unit, wherein the guides are movable to a position at which the guides are aligned with edges of the envelope held by the holding unit, the edges being parallel to a conveyance direction of the envelope;
- a detection unit configured to detect a position of the guides;
- an accepting unit configured to accept, from a user, a reference size of the envelope, the reference size being a size of the envelope from which the flap is excluded; and
- a printing unit configured to print an image on the envelope by shifting a position of the image based on the position of the guides detected by the detection unit and the reference size accepted by the accepting unit.

2. The printing apparatus according to claim 1, wherein the detection unit is configured to detect an opening width between the guides.

3. The printing apparatus according to claim 1, wherein the printing unit is configured to shift the image in a main-scanning direction.

4. printing apparatus according to claim 1, wherein the holding unit is a manual feed tray.

5. The printing apparatus according to claim 1, wherein the holding unit is a paper feed cassette.

6. The printing apparatus according to claim 1, wherein the reference size accepted by the accepting unit is selected from among standard-sizes.

7. The printing apparatus according to claim 1, wherein the printing unit is configured to print the image by shifting the position of the image in a case where the envelope is placed such that the flap contacts one of the guides.

8. The printing apparatus according to claim 1,
- further comprising a calculation unit configured to calculate an offset amount based on the position of the guides detected by the detection unit and the reference size accepted by the accepting unit,
- wherein the printing unit is configured to print the image by shifting the position of the image by the offset amount calculated by the calculation unit.

9. A method for controlling a printing apparatus including a holding unit configured to hold an envelope having a flap and guides configured to guide the envelope held by the holding unit, wherein the guides are movable to a position at which the guides are aligned with edges of the envelope held by the holding unit, the edges being parallel to a conveyance direction of the envelope, the method comprising:
- detecting a position of the guides;
- accepting, from a user, a reference size of the envelope, the reference size being a size of the envelope from which the flap is excluded; and
- printing an image on the envelope by shifting a position of the image based on the detected position of the guides and the accepted reference size.

10. A non-transitory computer-readable storage medium storing a computer program for causing a computer to execute a method for controlling the printing apparatus including a holding unit configured to hold an envelope having a flap and guides configured to guide the envelope held by the holding unit, wherein the guides are movable to a position at which the

guides are aligned with edges of the envelope held by the holding unit, the edges being parallel to a conveyance direction of the envelope, the method comprising:

detecting a position of the guides;

accepting, from a user, setting a reference size of the envelope, the reference size being a size of the envelope from which the flap is excluded; and

printing an image on the envelope by shifting a position of the image based on the detected position of the guides and the accepted reference size.

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